

# Brazilian Journal of Physical Activity and Health

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# PROCEEDINGS OF THE 1st Latin American Congress of Physical Activity and Health Research

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# Unifying and strengthening the physical activity and health research agenda in Latin America: moving together!

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Welcome to this special volume of the *Brazilian Journal of Physical Activity and Health*, which includes all the scientific papers presented at the *First Latin American Congress of Research in Physical Activity and Health* (CLIAFS), hosted virtually, due to the CO-19 pandemic, by the National Institute of Public Health of Mexico, from June 21 to 24, 2021.

Without a doubt, CLIAFS represented a tipping point for the strengthening and unification of our research field in Latin America.<sup>1</sup> In it, high quality scientific papers from all of Latin America were presented. Several important speakers from the United States, Europe and Australia, were also present at CLIAFS, which fostered a rich environment for exchanging ideas, sharing new methods, and making new connections – something not previously seen for our field in Latin America. In spite of all the unexpected challenges presented by the COVID-19 pandemic, CLIAFS went above and beyond in fulfilling its objective of providing a high quality scientific exchange space, with a regional fraternal and collaborative spirit.

Physical inactivity is one of the main risk factors for the development of several non-communicable chronic diseases, including type II diabetes, cardiovascular diseases, and various types of cancer.<sup>2</sup> In Latin America, the burden of physical inactivity is high: one in three Latin Americans is physically inactive,<sup>3,4</sup> and 11.4% of deaths in the region are attributable to physical inactivity.<sup>5</sup> In addition, physical inactivity is responsible for 1.3 billion international dollars in costs to Latin American health systems. Despite this, until CLIAFS, there was no scientific forum that brought together researchers from across Latin America focused on this field of study. CLIAFS, and the formation of the *Latin American Society of Physical Activity and Health* (SLIAFS), have come to complement and strengthen, with scientific evidence of local and regional relevance, the important physical activity promotion efforts that have been developed in Latin America over the past two decades. Such efforts have been led by key networks, like *Agita São Paulo* the *Physical Activity Network of the Americas* (RAFA-PANA).<sup>6</sup>

We are firmly convinced of the importance of investing in increasing the capacity, quality, and quantity of physical activity and health research in Latin America. This should be part of a comprehensive strategy for improving public health policies, programs and actions of the region. The first CLIAFS left us an enormous legacy, which is reflected by the great scientific quality and diversity of topics and perspectives of the works presented during the Congress, and included in this special volume. In this volume, you will learn about new methodologies for measuring physical activity and its associated factors; epidemiological surveillance studies; new findings of



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the effects of physical inactivity and sedentary lifestyle on different health outcomes; evidence of local and regional relevance regarding the population determinants of physical activity; several examples of innovative physical activity and health interventions; and studies examining the design, implementation and impact of public policies for the promotion of physical activity. However, this was only the first chapter of many more to come. On behalf of the Executive Council of the first CLIAFS and the newly formed SLIAFS, we thank all the speakers and co-authors of these abstracts, as they were undoubtedly the heart of the Congress. Let us continue *moving together!*

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Nubia Yaneth Ruiz Gomez



# FULL LENGTH ORAL PRESENTATIONS

## Session 1 | Physical activity during childhood



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**1er Congreso  
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# Adiposity indicators sports participation predict motor competency during childhood

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Rev Bras Ativ Fis Saude 26(suppl 3):2

**Background:** There are education and fitness programs that improve health, demonstrating how to model healthy behaviors and strengthen the doctor-patient bond. It is necessary to motivate and optimize the current physical conditions of health professionals, with programs of physical activity and recreation that lead the benefit of increasing their quality of life, playing a role in influencing others. **Aims:** To inspire nutritionists to exercise regularly as a means to improve health, by calling meetings to perform different types of physical activities for 12 sessions a year, with the motivation of being a promoter of physical activity. **Methods:** Field initiative with an open invitation to 10 routines of different exercises and outdoor physical activities: hiking, yoga, pilates, dancing, calisthenics, running, jogging, bodyweight, climbing the hills; Directed by nutritionists for health professionals, family, and patients, in safe, fun and free places. Every first or second Sunday of the month, calls were made to attend the city parks for activation led by expert health professionals. **Results:** Five downtown parks were chosen, accessible to various types of public transport, with pedestrian paths and suitable for bicycles or rollerblades, connected by main avenues, sidewalks, and access routes, with parking and appointment at a meeting point in the morning (8:00 or 9:00 am). The program was attended by 22 nutritionists, 1 medical student, 5 instructors in 10 sessions, achieving the motivation to start and continue physical activity and exercise through social networks and in a closed group on Facebook. Challenges of the participants: schedule, location, transportation, day of the week. **Conclusions:** With the completion of this project, the success of convening nutritionists and health professionals will boost the motivation of being promoters of physical activity and exercise, which will allow more nutritionists to join the project and play an integral role in inspiring others to reflect that exercise is a fun way to stay healthy. The use of various methods to influence and encourage other nutritionists to exercise more will recognize being generators of movement and recreation, leading by example, which could be adapted and replicated in other places. **Relevance:** Development of the program of the invitation of a nutritionist to his colleagues to turn it into a national movement.

**Keywords:** Exercise, Motivation, Physical Activity.

**Abstract code:** 46



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**1er Congreso  
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# Physical activity and motor competency as predictors of adiposity indicators during childhood

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Rev Bras Ativ Fis Saude 26(suppl 3):3

**Background:** Patients with mental disorders are at risk of developing cardio-metabolic diseases, where a sedentary lifestyle is an important associated factor. It has been observed that physical activity represents a protective factor for health, favoring morphological and physiological improvements in this population. However, the evidence is still limited with respect to the effect it exerts at the psychological level, individual and social subjective well-being in patients with some mental disorder. **Aims:** To determine the perception of the well-being of mental health hospital patients through the implementation of a physical activity program. **Methods:** A physical activity program of 12 sessions of 30 minutes, four days per week, oriented to the work of aerobic capacity and coordination skills, was carried out in 20 patients admitted to the mental health hospital (psychiatric hospital) of the city of Chihuahua. An open-ended questionnaire was applied to identify the perception of physical, psychological and social well-being, as well as adherence, satisfaction, and knowledge of the benefits of exercise. The texts were analyzed in the Atlas ti program. V7; Essential codes or categories, code co-occurrence, semantic network, and word frequency were obtained. **Results:** 100% of the patients expressed satisfaction with the physical activity program. In all the texts, the words that were repeated the most were "good", "de-stress / motivation / entertainment / clearing" and "living together / companionship". A co-occurrence of codes was found between knowledge of benefits and: physical changes (12-0.26), psychological changes (4-0.04) and social changes (1-0.03); between general satisfaction and: psychological changes (7-0.14) and physical changes (2-0.04); as well as between, taste for exercise and: psychological changes (8-0.16), physical changes (6-0.11) and social changes (1-0.03). Textual quotations stand out such as "Because without exercise we cannot have mental health", "Because I clear myself, I like it, for health, for fun and I learned new things", "I feel more comfortable with my person, it is easier than Be in a good mood after doing physical activity." **Conclusions:** The physical activity program had a positive impact on the individual and social psychological well-being of patients with a mental disorder. **Relevance:** It is important to propose physical activity programs in mental health hospitals (psychiatric). The perceived individual and social benefits are important for the integral treatment of patients with mental disorders and contribute to their social reintegration.

**Keywords:** Mental health, Physical activity, Mental disorder, Social reintegration.

**Abstract code:** 48



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# The relation between physical fitness, nutritional status and school type among Chilean school-age children

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Rev Bras Ativ Fis Saude 26(suppl 3):4

**Background:** The use of public transport is associated with the promotion of physical activity. Latin America has undergone several transformations in its public transport systems aiming not only to urban mobility, but to also encouraging active transport. Despite the efforts of Bogotá on implementing several strategies of active transport, the city faces challenges of transport accessibility and equality among the poorest inhabitants living in informal settlements. **Aims:** To assess the relationship between access to public transport and the minutes of walking for transport among adults in two vulnerable areas of Bogotá, and to evaluate whether living in the periphery of the locality modifies this relationship. **Methods:** We selected 2062 inhabitants, 1033 in Ciudad Bolívar, and 1029 in San Cristóbal, two of the administrative subareas of Bogotá with the lowest Transit Opportunity Index and the highest poverty levels. Walking for transport was measured using the International Physical Activity Questionnaire. Access to public transport was assessed by a questionnaire. We classified neighborhoods according to their location in the locality (proximal vs distal). Log-linear multiple regression models were used to estimate the association between minutes of walking for transport and access to public transport. **Results:** The average age of the population was 43.5y, and 63% were female. Overall, the median of walking for transport was 100 (IQR=40-210), and 89% of participants use public transportation or walk as their main mode of transport. Living between 10-19 minutes and between 20-29 minutes from a Bus Rapid Transit feeder stop increases the average walking-minutes by 21, and 34%, respectively, when compared to individuals living at ≤10 minutes. However, living at ≥30 minutes from the BRT feeder stop decreases the average minutes of transport PA by 28%. Living in the distal neighborhoods decreased the walking-minutes by 22%. We observed similar patterns with access to the regular bus. Living in the distal periphery modified the effect of access to transport on walking for transport. **Conclusions:** Walking for transport was positively associated with less access to BRT feeder stops. This relationship was stronger among individuals living in distal areas of the peripheries. **Relevance:** This study would help to understand the dynamics of urban peripheries, emblematic of Latin American urban settings, and the role of public transport access on physical activity promotion. Furthermore, the results of this study could be understood within the need-based framework of low-to-middle-income countries that differs from the choice-based-framework of high-income countries.

**Keywords:** Peripheries, Transport walking, Public transport.

**Abstract code:** 36



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# Latino caregivers perceptions of girls' physical activity in an urban low-income neighborhood

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Rev Bras Ativ Fis Saude 26(suppl 3):5

**Background:** Physical activity has various health benefits, such as improving immune and cardiorespiratory functions. However, in 2017, 57.6% of Mexican adults were physically inactive. Physical inactivity is the fourth most important mortality risk factor worldwide. It is known that, in cities, people from low and very low socioeconomic level perform less physical activity than people from moderate or high socioeconomic level. The built environment plays a very important role in promoting physical activity. **Aims:** To describe the availability of sports infrastructure according to the level of marginalization of the metropolitan areas of the Valley of Mexico, Monterrey, Guadalajara, and Puebla-Tlaxcala in 2017. **Methods:** For geospatial analysis, the delimitations of the metropolitan area, the basic geostatistical areas (AGEB), and the levels of marginalization and sports infrastructure by AGEb was obtained. These data were obtained from 5,896 sports establishments, both public and private. The centroid of each AGEb was identified and two buffers were calculated: 1 and 1.5 km<sup>2</sup> to analyze the availability of sports infrastructure. The correlation between the availability of sports infrastructure and the degree of marginalization by metropolitan areas was estimated. **Results:** When using the 1 km<sup>2</sup> buffer, there was no availability of most sports infrastructure in any metropolitan area. When using the two buffers, there was a greater availability of private than public infrastructure. Guadalajara was the metropolitan area with the greatest availability of sports infrastructure, followed by the Valley of Mexico, Monterrey, and Puebla-Tlaxcala. In the four metropolitan areas, the level of marginalization was negatively related to the availability of private, public, and total sports infrastructure. In Guadalajara, there was no association between the level of marginalization and the availability of infrastructure using the 1.5 km<sup>2</sup> buffer. **Conclusions:** The availability of sports infrastructure is low, and access in areas with high and very high marginalization is more limited. Guadalajara seems to be the only metropolitan area that encourages physical activity at all levels of marginalization. **Relevance:** Our data indicate that it is necessary to increase the availability of different types of sports infrastructure, especially in socioeconomically disadvantaged areas. The above is a prerequisite to promote a habit that reduces the risk of chronic noncommunicable diseases.

**Keywords:** Physical activity, Overweight, Mexico.

**Abstract code:** 13



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# Meeting Physical Activity Guidelines is associated with parental expectations and playing outside for Hispanic children in South Texas

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Rev Bras Ativ Fis Saude 26(suppl 3):6

**Background:** Active transport, mainly cycling, is associated not only with health benefits, but also with health care economic savings, climate change mitigation, and reductions in traffic congestion and air pollution. However, only a minority of the population cycles as a mode of transport. Due to this, various cities have implemented public bike sharing systems and bicycle lanes, promoting active transport. **Aims:** To explore sociodemographic, behavioral and health conditions, and transport related mobility between private cyclists (PC) and bike sharing users (BSU) from Santiago de Chile. **Methods:** Cross-sectional study conducted between May and September 2018. PC and BSU from 3 different systems answered to a survey about physical activity levels, frequency of cycling, social habits, health conditions (diabetes, hypertension, hypercholesterolemia and overweight) and urban perceptions. BSU were intercepted in affluent neighborhoods in approximately 30 points on bike lanes. However, PC were approached during the red-light phase in middle-high income neighborhoods. Also, distance (meters) travelled was estimated via geocoding determined by the origin and destination of their trips (likely routes) at a reference value of 15 km/hour. Multivariate logistic regression was fitted in order to estimate the association between overweight and type of users. **Results:** 1305 adults' participants (62.9% males) with an average age of 33.0 ( $\pm 10.9$ ) years and 88.9% fulfilled physical activity recommendations. BSU represented 44.7% ( $n=591$ ) and had higher educational levels ( $>12$  years: 89.5% vs 81.8%) and car ownership (88.8% vs 61.5%) than PC. However, PC had higher cycling frequency ( $>3$  times/week: 63.3% vs 55.2%), higher distance travelled (5951.7 vs 5220.8 meters) and their main reason was cycling to work (53.8% vs 49.4%). Moreover, 41.2% of BSU and 31.0% of PC reported that instead of cycling, they would opt for private transport and public transport, respectively. Lastly, PC were associated with higher odds of overweight (OR 1.35; 95%CI 1.05-1.74) after controlling for socio-demographics. **Conclusions:** Amongst cycling users, we found a distinct demographic profile suggesting that BSU have more modes of transport and lower odds of being overweight than PC, despite higher usage. **Relevance:** The success of strategies to promote bicycle use as means of transport relies, in one hand, on knowing the characteristics of whom using it, facilitating modifications toward increasing quantity and diversity of users. On the other hand, impact assessments of those strategies should incorporate the evaluation of results not only in user's quantity, but also its effects in other dimensions, such as physical activity, health and urban planning.

**Keywords:** Bicycling, Bicycle share, Active travel.

**Abstract code:** 26



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## FULL LENGTH ORAL PRESENTATIONS

### Session 2 | Measurement, surveillance and policy



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# Research on physical activity and health in the Americas temporal trends and main characteristics

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Rev Bras Ativ Fis Saude 26(suppl 3):8

**Background:** The physical education class (PEc) is the ideal time to promote physical activity (PA) among children and adolescents during school hours. Despite the benefits of PA to health, academic performance and the prevention and control of chronic noncommunicable diseases, about 80% of children and 35% of adolescents in Mexico are physically inactive. **Aims:** Identify barriers and structural opportunities for quality physical education in primary and secondary schools of the National Education System in Mexico. **Methods:** We conducted a qualitative study using semi-structured interviews and focus groups with decision-makers from the Ministry of Education and Health and the National Council of Physical Culture and Sports (CONADE); and local actors involved in the design and implementation of the PEc in three states of Mexico. We perform content analysis with the ATLAS.ti software. **Results:** The following structural barriers and opportunities for PE were identified. Barriers: At the national level, CONADE's actions focus on sports development and are not articulated with the PEc, school managers often prioritize other activities and/or subjects over the PEc. In the southeast region, the predominance of speakers of indigenous language and customs and customs in the. Opportunities: The Ministry of Health has the experience to promote PA in the school environment, CONADE has materials and equipment for physical activation, school management heads the leadership of the School Technical Councils and can influence the objectives of the routes of improvement in schools. **Conclusions:** The barriers identified denote a complex picture of physical education in Mexico. However, the opportunities that exist can be maximized with advocacy strategies and social communication campaigns to position the benefits of PE among girls, boys and adolescents. **Relevance:** To our knowledge, it is the first study to characterize the structural barriers and opportunities for PE at the national level in Latin America. The results can lead to an identification of opportunities to strengthen PE in the region.

**Keywords:** Physical education, Physical activity, Basic education.

**Abstract code:** 52



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# Accuracy of physical activity questionnaires to estimate total energy expenditure in a sample of Mexican adults

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Rev Bras Ativ Fis Saude 26(suppl 3):9

**Background:** Among the major concerns of programs aimed at promoting physical activity (PA) among breast cancer (BC) survivors are program sustainability and patient adherence. **Aims:** The overall aim of this study was to test a theory-driven, community-based program to promote PA among BC survivors, delivered by a governmental entity. Our specific aims were to: 1) design and implement an eight-week musicalized behavioral PA program for BC survivors; 2) assess attendance and monitor PA intensity; 3) assess program effects on physical condition; and 4) qualitatively evaluate the experiences of program users and stakeholders. **Methods:** This quasi-experimental study used a concurrent mixed methods approach involving: 1) Interviews with purposive sampling methods conducted with multisector stakeholders, following the RE-AIM framework, to finalize program content; 2) Pre and post data collection through sociodemographic surveys, anthropometric and accelerometer measurements, six-minute walk test, and focus groups exploring patient motivations and perceived barriers. 24 PA sessions were held 3 times per week, and were 45 minutes long initially, followed by increases to 60 minutes during the last week. Social cognitive theory-derived strategies were employed throughout the program. **Results:** We interviewed 15 PA and health stakeholders, who underscored the relevance of community-level PA promotion for BC survivors and the challenges of engaging healthcare system actors for program adoption and maintenance. Participants of the study (n=64) were 56 years old (SD=9.6), from low to middle-income households (98%), and diagnosed with cancer 6.2 years ago (SD=5.53). Seventy-seven percent were overweight and 56% reported meeting PA recommendations. Eighty-eight percent of intervention participants attended more than 50% of the sessions. Average moderate-to-vigorous PA (MVPA) during the sessions ranged from 10.9-16.0 minutes. Among women who participated in at least 70% of the sessions, the 6-min walk distance meters increased on average 26 meters (p=0.02) while among control group it decreased on average -0.4 meters (p=0.97). Similarly, the oxygen consumption increased on average 0.8ml/kg/min among intervention group and did not change in control group 0.0ml/kg/min. Intervention participants reported receiving multiple benefits in relation to their wellbeing and having strengthened their self-efficacy to overcome barriers to PA attendance. **Conclusions:** The preliminary results of this co-created PA program indicate positive outcomes for PA participation among BC survivors. **Relevance:** "Mi Cuerpo Mi Ritmo Mi Voz" is a promising intervention for promoting PA among BC survivors in Latin America, building behavior change knowledge and strategies. The high adherence and delivering by a government entity are relevant factors for sustainability.

**Keywords:** Cancer survivors, Adherence, Physical activity, Behavior change, Intervention.

**Abstract code:** 28



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# SAPASEN: Physical activity and sedentary behavior research collaboration in South America

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The South American Physical Activity and Sedentary Behavior Network (SAPASEN), was designed to provide ongoing transnational empirical evidence about physical activity and sedentary behavior in South America.

**Keywords:** Bibliometry, Physical activity, Evaluation.

**Abstract code:** 170

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Rev Bras Ativ Fis Saude 26(suppl 3):10



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# Involvement of Latin American countries in the Global Matrix on Physical Activity of Children and Youth initiative

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Rev Bras Ativ Fis Saude 26(suppl 3):11

**Background:** Worldwide, 20–25% of the adult population suffers from metabolic syndrome (MS). In Chile, according to the latest national health survey (ENS) 2016–2017, the prevalence of MS in adults corresponds to 40.1%. One of the behavioral risk factors for MS is physical inactivity, representing 35.1% and 42.5% in women and men, respectively, at the national level. Also, sedentary behavior (SB) could be associated with MS acting independently of physical activity (PA). **Aims:** To examine the association between the level of PA and SB with the prevalence of MS in a representative sample of adults belonging to the ENS 2016–2017. **Methods:** Secondary analysis of ENS 2016–2017, whose design is transversal. The PA and SB data were obtained through the global physical activity questionnaire (GPAQ v2), classifying the participants as insufficiently active. **Results:** The average age of the participants in this study was  $48.02 \pm 19.02$  years, 63.85% were women, and 54.98% had an average educational level. 15.07% of the participants of the ENS 2016–2017 were active and 10.34% of the respondents presented a high SB. The active subjects with low SB were 38% less likely to present MS (95% CI: 0.44–0.87) compared to the reference group (insufficiently active and high SB). In addition, those participants with a high educational level had a 37% lower probability of presenting MS compared to a low educational level (95% CI: 0.48–0.82). **Conclusions:** The results suggest that complying with the recommendations of recreational PA and presenting SB <8 hours/day, decreases the probability of suffering from MS. Also, a higher level of education could be a protective factor against MS. **Relevance:** The results of this study could be considered for the development of future public policies oriented to the promotion of PA and the decrease of SB to reduce the prevalence of MS.

**Keywords:** Physical activity, Metabolic syndrome, Sedentary behavior.

**Abstract code:** 43



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# Report card of physical activity indicators in Ecuadorian children and adolescents

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Rev Bras Ativ Fis Saude 26(suppl 3):12

**Background:** There is renewed interest in 24-hour time use and online physical activity (PA) recalls in health research. Twentyfour hour recalls can give more accurate estimates of time spent in complex and intermittent behaviors than questionnaires while also providing rich contextual detail. These features support a recent interest in the entire 24-hour day including sleep, sedentary, light and moderate + PA. **Aims:** The goal of this presentation is to introduce a newly updated online English language Activities Completed over Time in 24 Hours (ACT24) smartphone/computer enabled previous day recall and discuss translating and adapting this instrument for use across Latin America. **Methods:** We describe the updated version of the ACT24 instrument, a past validation study in ~800 older US adults. We also report results from the NORC AmeriSpeak Panel, a nationally representative sample of US adults, where ~2,500 participants completed the recall twice during the fall of 2019. To complete the recall respondents selected from 175 activities organized into 14 major categories such as 'Leisure, relaxation, social activities', 'Shopping, errands and appointments' and 'Occupation, working for pay'. Additional questions addressed demographic traits, sleep characteristics height and weight. **Results:** Validation studies of ACT24 indicate high validity in estimation of total energy expenditure compared to estimates based on doubly labeled water and accurate estimates of the amount of time spent sitting and in diverse active behaviors. Early results from this 2019 Panel study include valid responses containing 5 or more activities reported in 22+hours from ~75% of respondents and 15- 20 minutes completion times per recall. We plan a series of analyses addressing sedentary time, MVPA, energy expenditure and walking. An overview of these results will be ready to present at the conference. **Conclusions:** Previous-day recalls are a valuable complement to device based and standardized survey questions for measuring the amount and type of physical activity. They are particularly useful for assessing the social and environmental context of PA. Single recalls can produce valid estimates of group level PA and multiple recalls per person can produce valid estimates of within and between person variation in PA. Such tools could be very useful in countries with growing smartphone usage and a diverse and changing mix of occupational, household, transportation and leisure time physical activity that can be difficult to capture with other approaches. **Relevance:** The proposed presentation illustrates advances in physical activity measurement tools that could be adapted for use in the Americas.

**Keywords:** Time use, 24 hours, Adaptation.

**Abstract code:** 47



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# Current state of urban public policy related to the promotion of Physical Activity in Mexico City

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Rev Bras Ativ Fis Saude 26(suppl 3):13

**Background:** Growing evidence indicates that mobile applications (apps) have the potential to be used as innovative tools for physical activity research. The Momentary Ecological Assessment (EMA), by recording real-time data and naturalistic environments, can gather information about the behavior of physical activity. **Aims:** Systematic review the literature on EMA methodology related to physical activity. **Methods:** A systematic review of the literature according to the PRISMA Declaration. Four databases (PsycINFO, CINALH, Medline and Web Core Science Collection) were reviewed from 2008 to 2018. **Results:** A total of 76 studies of 297 articles on EMA and physical activity were included in this review. 71% of the studies specifically used "EMA" to assess physical activity behaviors. 51.3% of the studies (39) used mHealth technology, mainly smartphones. 79.5% of these studies (31 of 39) were published during the last 4 years. In contrast, 58.8% of the studies were only published in the first three years of the 10-year period. The accelerometer was the main built-in sensor used to collect the behavior of physical activity (69%). Most studies were conducted in young adults. 60% of the studies were conducted with women and 82% with healthy women. 57.9% had a duration between 1 and 7 days and 37% performed between 3 and 7 evaluations per day. **Conclusions:** There is sufficient evidence for the term EMA when mHealth technology is used to monitor lifestyle behaviors in real time in natural situations. We define the use of mobile computing and technologies for the ecological evaluation of health behaviors and lifestyles. Therefore, the mEMA methodology can facilitate the monitoring of healthy lifestyles under both subjective and objective perspectives. The trend for future research should be the automatic recognition of the user's physical activity without interrupting their behavior. **Relevance:** The main relevance is that it could allow the deepening of healthy physical activity behavior.

**Keywords:** Bibliometry, Physical activity, Evaluation.

**Abstract code:** 2



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# FULL LENGTH ORAL PRESENTATIONS

## Session 3 | Vulnerable populations and special interest groups

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# Factors associated with time spent in physical activity within the physical education class in Chilean adolescents

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Rev Bras Ativ Fis Saude 26(suppl 3):15

**Background:** Demographic change, particularly in Latin American populations, has imposed priority intersectoral challenges. Physical activity (PA) is the most cost-effective strategy to achieve these challenges. However, older adults are the most inactive population group, and the causes of this pandemic are multifactorial. Although Colombia has progressed in the study of PA, this has focused on individual conditions with an underdevelopment in the study of the effect of other levels of influence, such as the environment, which is one of the most challenging in Latin America. Models used to study the effect of multilevel factors have not allowed the understanding of the mediating role of individual characteristics in the relation between environments and PA, and this could be, the most plausible explanation to understand the failure of interventions and to promote new public health strategies. **Aims:** To determine the effects and mediation mechanisms of the social and built environment on achieving the recommended levels of PA among older adults from three Colombian cities. **Methods:** Using an ecologic model approach and a cross-sectional design, a total of 1463 older adults from three Colombian cities were included. Participants were recruited using a two-phase probabilistic sampling. Individual characteristics (demographics, health and habits, social support and perceived environment) were considered as “mediators” in the relation between the built environment and PA, using multi-level techniques and structural equations. **Results:** The prevalence of PA was of 5,5% and factors associated with this were intra-personal, inter-personal and of the perceived and built environment. Aesthetics had a direct effect on PA, whereas social support mediated the relation between urban design and PA; not perceiving barriers for PA moderated the association between social and perceived environment conditions with PA. **Conclusions:** In order to promote engagement in PA among older adults, multi-sectoral efforts are required that integrate individual and environmental level interventions, focused in building social support networks and improving the urban design of neighborhoods to achieve an active ageing. **Relevance:** Understanding PA from new determinants allows redesigning strategies which may be implemented in Latin American contexts and improving research capacity.

**Keywords:** Multi-level, Ageing, Mediation.

**Abstract code:** 61



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# Physical Fitness determination after a counseling and exercise program with nutrition students

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Rev Bras Ativ Fis Saude 26(suppl 3):16

**Background:** The deterioration of the immune system associated with age, called immunosenescence, is characterized by functional deregulation of T cells. Although it affects all individuals, different environmental and genetic factors affect the individual's susceptibility or resistance to immunosenescence. It has been shown that physical activity improves autonomy and functionality in older adults. However, it has not been studied if physical activity affects immunosenescence. **Aims:** To analyze peripheral blood T cells in older adults and correlate these data with physical activity levels. **Methods:** Thirty volunteers over 65 years old and 7 young controls were recruited. The functional capacity was measured through the "Composite Physical Function (CPF) scale", in addition to a battery of questionnaires that included instruments of physical activity, physical condition, health-related quality of life, depression, medical history, and sociodemographic data. Peripheral virgin CD4 + and CD8 + T cells were analyzed by flow cytometry. **Results:** Virgin T cells were shown to decrease and IL-6 levels increase as older people age. Interestingly, there is a strong negative correlation between the number of virgin T cells and IL-6 levels in older adults, which suggests a direct link between the reduction of the group of virgin T cells and the increase in inflammation. Physical activity in youth did not affect immunosenescence and inflammation in older adults, but physical activity increases the number of virgin T cells and reduces inflammation in the elderly. **Conclusions:** The results showed a reduced number of virgin T cells and higher levels of IL-6 as older people get older. In addition, the strong negative correlation between these parameters suggests that virgin T cells may have a direct suppressive activity on innate immune components. In addition, physical activity can reduce immunosenescence and inflammation in older people. **Relevance:** Latin America is undergoing a demographic transition that is increasing people's life expectancy. Through the results of this study, physical activity can modulate the immune response in the elderly.

**Keywords:** Physical activity, Elderly, Immunology, T lymphocytes.

**Abstract code:** 59



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# Effect of a physical activity intervention on depressive symptoms in low-income Latina women living on the US-Mexico border

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Rev Bras Ativ Fis Saude 26(suppl 3):17

**Background:** Community-based programs encouraging physical activity (PA) practice are modifier strategies of sedentary behaviors. Ciclovía and Recreovía have been implemented in Bogotá, as opportunities to increase PA levels in leisure time. However, studies evaluating adherence in such programs are limited. **Aims:** The purpose of this study was to assess uptake of the Ciclovía and Recreovía programs, understanding associated factors with participation and effects on wellness. **Methods:** This prospective study included quantitative and qualitative data of 120 Recreovía and 30 Ciclovía users. We collected baseline and follow-up data recording anthropometric and sociodemographic characteristics, self-reported engagement in PA (using International Physical Activity Questionnaire), and PA during activity (using accelerometers). Ciclovía users' electrodermal activity (EDA), as a marker for stress levels, was assessed. Recreovía users' brainwaves were evaluated to determine attention and meditation, and their emotions were captured using a face recognition software. The qualitative component involved the Our Voice citizen science model in which participants identify environmental features that encourage or hinder participation. Data analysis was conducted to test statistical significance of the variables, and associated factors with the non-continuity of the Recreovía program. Qualitative data was thematically analyzed. **Results:** Ciclovía participants were primarily men (77%) on average 36 years old (SD=12.88) and 53% were overweight. Recreovía participants were mainly women (88%), on average 49 years old (SD=14.22) and 66% were overweight. Follow-up rate was 57% for Ciclovía participants and 68% for Recreovía participants. 63% of Ciclovía and 83% of Recreovía participants meet PA recommendations in leisure time. Moderate to vigorous PA during the Recreovía sessions on Sundays represents about 24% of the total session time. Ciclovía users' EDA was recorded on average 1.5 (SD 0.76) hours while participating in the program. In addition, face coding of Recreovía users showed prevalence of positive emotions (21% happiness) and brainwaves during PA reported 52% attention and 57% meditation. Associated variables with non-continuity in Recreovía were to be younger, unfamiliarity with PA recommendations, and not frequenting other Recreovía sites. Ciclovía and Recreovía users underscored organization and quality of the programs as facilitators, while reported facilities' limited maintenance as barrier to PA practice. **Conclusions:** The accomplished high response rate shows feasibility of following-up Ciclovía and Recreovía users over time. **Relevance:** This exploratory study provides an adaptable and innovative design to assess the uptake of similar PA programs through follow up and effects in emotional experience. Latin America has numerous community-based health promotion programs featuring regular free programming in public spaces.

**Keywords:** Physical activity, Follow-up, Uptake program, Community-based, Longitudinal studies.

**Abstract code:** 32



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# “My body My Rhythm My Voice” Physical activity promotion among breast cancer survivors A co-creation experience

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Rev Bras Ativ Fis Saude 26(supl 3):18

**Background:** The Sport England Model for estimating the Outcomes and Values in the Economics of Sport (MOVES) is a free, easy-to-use tool that estimates the return of investment of sport and physical activity interventions in the UK. Caminando con vos is a walking intervention of the Institute of Sport and Recreation (INDER) of Medellín in Colombia. **Aims:** The objective of this study was to use MOVES to conduct a rudimentary economic evaluation of Caminando con vos, thereby arguing that similar tools should be developed for use in Colombia and elsewhere in Latin America. **Methods:** The number of participants in 88 walks in 2019 was determined from online bookings and manual head counts. The distances walked were estimated from mobile phone apps. MOVES version 2.0 was used to conduct the economic evaluation and it was assumed that: 45% of participants were male; the typical age of participants was 46–60 years; the activity level of participants before starting the intervention was low; the intensity was vigorous (cross country/hills); the duration was four hours per walk; the frequency was two days per week; the number of participants was 400 per week; 60% of participants completed the first year; ongoing participation was three years; the programme cost was GBP 10,000 per year and was ongoing; the willingness to pay per QALY gained was GBP 20,000. **Results:** It was estimated that 10 cases of chronic diseases would be averted over 25 years and that the walking intervention would be cost effective, saving the UK National Health Service GBP 1.02 per GBP 1.00 invested. **Conclusions:** This rudimentary economic evaluation suggests that the walking intervention, Caminando con vos, is associated with reduced risk of chronic diseases and is cost effective. **Relevance:** MOVES has an ‘epidemiological engine’ containing UK data regarding the population, age, gender and related disease and mortality rates for conditions amenable to change through improved physical activity. MOVES estimates the return of investment of sport and physical activity interventions and a similar tool should be developed for use in Colombia and elsewhere in Latin America.

**Keywords:** Exercise, Walking, Cost-benefit analysis.

**Abstract code:** 14



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# Fragility and Light Physical Activity in the Maule Region in Chile

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Rev Bras Ativ Fis Saude 26(suppl 3):19

**Background:** Currently, some determinants from the micro-environment could be related with youth physical activity levels. Few studies have analyzed the socio-cultural determinants that influence physical activity levels among youth (Jaeschke et al., 2017). It is important to highlight the singularity of border cities like Rivera (Uruguay) y Santana do Livramento (Brasil) which share the same space but with different norms and cultures. Considering that levels of physical activity during leisure among adults from both countries are similar (Chrochemore et al., 2014; Brazo-Sayavera et al., 2018), would physical activity levels and sedentary behavior of youth determined by the country of residence during the first years of life?, highlighting that youth physical activity levels may decrease the prevalence of chronic diseases during adulthood (Fernandes y Zanesco, 2010). Few studies exploring sedentary behavior among school age children from Uruguay exist, posing a challenge for the country in the production of knowledge. **Aims:** To analyze the time engaged in physical activity and sedentary behavior among school age children according to country of birth. **Methods:** A total of 69 school age children aged 6 to 10 years were selected from a private institution in Rivera (Uruguay), which country of birth was Brasil or Uruguay. We used the SAYCARE questionnaire to report the amount in minutes of physical activity and sedentary behavior. Daily minutes in physical activity and sedentary behavior were analyzed using the Mann-Whitney test. **Results:** In total, 30% of participants were born in Brazil. No differences between the time engaged daily physical activity were observed between country of birth ( $89,01 \pm 75,29$  vs  $101,13 \pm 61,02$  minutes; Brazil and Uruguay respectively). However, significant differences between the daily time engaged in sedentary behavior were observed ( $95,95 \pm 41,27$  vs  $69,46 \pm 38,21$  minutes; Brazil and Uruguay respectively). **Conclusions:** In this study, school age children born in Brazil presented lower daily time in physical activity and significantly lower time in sedentary behavior compared to school age children born in Uruguay. **Relevance:** These findings add new information to this theme in the region and may be relevant for those Latin American zones with open borders.

**Keywords:** Early Years, Determinants, Health.

**Abstract code:** 71



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# Physical exercise, health and ageing – 10 years of experience in research in the University of São Paulo-USP

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Rev Bras Ativ Fis Saude 26(suppl 3):20

**Background:** Mexico City (CDMX) has complex health challenges that disproportionately affect women. Global health policy makers consider Active Transportation (AT) strategies practical interventions that can successfully address complex health threats, such as air pollution, obesity, diabetes and cardiovascular diseases (CVD). Cycling, the focus of this paper and a form of AT, offers multiple benefits for Mexico's women as well as for the wider population and addresses the aforementioned health challenges. In Mexico and worldwide, several factors inhibit women's participation in cycling. International evidence identifies five cycling uptake barriers: safety and risk perception, accessibility, environment factors, cultural context and personal factors. Few people cycle in CDMX (1.4%) where a distinct gender gap exists among cyclists. Evidence indicates that CDMX women make 22% of the total bicycle trips in the city. However, this statistic obscures CDMX women's attitudes about cycling and the barriers that make them reluctant to incorporate cycling into their daily routines. **Aims:** Describe and analyse gaps in the literature concerning factors and barriers that affect CDMX women's cycling behaviour. Offer evidence-based recommendations for cycling adoption strategies in CDMX. Consider Mexican and Latin-American initiatives that have successfully encouraged cycling as a health strategy. **Methods:** We use 'COM-B' behaviour change theory to describe and analyze factors that limit and promote women's cycling. We identify and adapt international recommendations for cycling uptake to the CDMX context and apply assumptions about CDMX women's travel patterns to analyze AT strategies and cycling. **Results:** Given ambiguous data about CDMX women's cycling behaviours our analysis contrasts international evidence and literature to available CDMX data. We identify specific areas of concern: (1) Mobility and cycling surveys that do not record adequate data about users' personal characteristics. (2) Gender/sex public transport studies that do not include cycling. **Conclusions:** CDMX policy makers should draw on AT strategies and specific behavior change techniques in combination with comparative analysis of international and national cycling data for women to encourage their uptake of cycling. Such interventions matter since AT and women's cycling activities can address a range of acute complex health problems that impact CDMX and disproportionately affect women and their families. **Relevance:** Evidence shows that Mexican and Latin American initiatives have successfully encouraged cycling as a health strategy, but these have not sufficiently included or considered women cyclists and how AT strategies can address multi-dimensional health challenges.

**Keywords:** Physical activity, Womens health, Active transport.

**Abstract code:** 39



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## FULL LENGTH ORAL PRESENTATIONS

### Session 4 | Urban settings and built environment



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# Perceived neighborhood environment and walking trips among Brazilian older adults over time

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Rev Bras Ativ Fis Saude 26(suppl 3):22

**Background:** Although there is evidence of the health benefits of different broad physical activity constructs, further discussion is still needed to understand which types of practices should be prioritized for action for promoting physical activity within context of low- and middle-income countries (LMICs). **Aims:** This work reflects on some of the current forms of promoting physical activity in LMICs, and proposes further visibility to body practices and leisure physical activities and their inequalities. **Methods:** This is a theoretical essay. The current scenario of increasing inequalities in the region is outlined and discussed in the light of two theories: The Inverse Equity Hypothesis, and the Inverse Care Law. Further, the ethical and practical reasons for addressing these inequalities are presented, highlighting the relevance of public policies within this context. **Results:** The Inverse Equity Hypothesis seeks to understand how inequalities tend to be established in health indicators, starting from an expected increase in inequalities when health innovations arise that initially (and mostly) reach the most privileged, both socially and economically. The Inverse Care Law highlights that the availability of adequate health care tends to vary inversely with the population's needs. When applying these theories to the theme of physical activity promotion, and whilst aiming not to further increase disparities in access to opportunities for physical activity practice, this essay argues in favor of the expansion of public policies in the current context. **Conclusions:** It should become a priority to properly understand current public policies and their link with SUS, along with the linkages with and principles of action of other related sectors (such as city infrastructure and sports and leisure). This perspective will help in advancing actions to promote physical activity practices that are adequately socially contextualized, and that are targeted to those who need them the most. **Relevance:** This theoretical essay calls for us to reflect on the current ways in which we are promoting physical activity, which are often socially de-contextualized, and to in turn, support public policies aimed at improving access to opportunities for physical activity practice for those who have the most need.

**Keywords:** Equity, Theoretical essay, Health promotion.

**Abstract code:** 44



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# Environments and physical activity among older adults from three Colombian cities. Effects and mediation mechanisms

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Rev Bras Ativ Fis Saude 26(suppl 3):23

**Background:** It has been shown the importance of investigating obesity and health problems caused by a lack of physical activity, especially in young people with Down Syndrome. **Aims:** To analyze the effects of the implementation of a popular dance program on physical and anthropometric conditions in young people with Down Syndrome in the U.E.E. Agustin Tamariz Cave in Cuenca. **Methods:** An experimental study that evaluated 21 young people, 13 men (41.9%) and 8 women (25.8%) with Down syndrome of 12-18 years. The demonstration method was used for the dance program and for the BMI, wingspan, waist-hip circumference, the method described by the WHO was applied. **Results:** Before the program, women were 66.67% and men 58.34% overweight and obese, then women decreased to 44.44% and men to 50%. Initially, women presented 100% very poor physical condition (very poor PC) and 4.76% poor physical condition (poor PC); males 91.67% of (very poor PC) and 4.76% of (poor PC) according to the long method. By the short method, women reached 88.89% of (poor PC) and 11.11% of (average PC); the men reached 66.67% of (poor PC), 25% of (average PC) and 8.33% of (good PC). Then, by the long method, it decreases to 50.00% (very poor PC), 25.00% of (poor PC) and 25.00% of (average PC); the women kept 100% of (very poor PC). By the short method, men fall to 16.67% (poor PC), 33.33% of (average PC), increasing to 50.00% of (good PC); in women, it was reduced to 66.67% of (poor PC) and increased to 33.33% of (average PC). **Conclusions:** According to the BMI values, more than half of the participants were overweight and obese. It is possible that the assessment of overweight and obesity in people with Down syndrome requires an adjustment in the normal values assigned to the BMI of children. Health, lean-fat weight, body composition, and physical condition can be evaluated and controlled through constant physical activity in young people with Down Syndrome but deep research is required in this area in order to characterize the anthropometric measures of this population in different areas and regions of the country. **Relevance:** Studies show the benefits of daily physical activity, help prevent/reduce overweight/obesity, improving the quality of life and reducing chronic health problems of your condition.

**Keywords:** Physical Activity, Health, Down Syndrome, Overweight, Obesity.

**Abstract code:** 35



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# Sociodemographic Health Status and Transport related Mobility in Private Cyclists and Bike Sharing Users from Chile

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**Background:** High-intensity exercise induces oxidative stress. Adaptation to such stress offers benefits to health and physical performance. Studies in humans and animals have shown that the response to exercise-induced oxidative stress can be affected by the consumption of antioxidant-rich foods such as beetroots. **Aims:** To evaluate the effect of consumption of beet juice on the performance and levels of reduced glutathione (GSH) of moderately trained master swimmers exposed to stimuli of lactate resistance. **Methods:** Experimental-cross study. Thirteen male and female master swimmers (age  $45.8 \pm 10.2$ ), completed two blocks of one-week high-intensity training, which included supplementation with two portions of 140 ml of beet juice for eight days, separated by a cleaning period. The performance was evaluated using a 6x50m Test crawl style before and after supplementation. Time and lactate were recorded during the test. Total glutathione (GSH) was analyzed before and after supplementation. **Results:** The swimmers had an average BMI of  $25.3 \pm 3.1$  kg / m<sup>2</sup>, body fat  $27.3 \pm 5.1\%$ , leukocytes  $5.4 \pm 0.7 \times 10^3 / \mu\text{L}$  and hemoglobin  $15.5 \pm 3.1$  g / dL. Lactate at the beginning of the performance test was not significantly different in both groups ( $p = 0.08$ ), while at the end, it was lower in the GSJB  $13.1 \pm 2.3$  mmol / L compared to the GNS  $13.8 \pm 1.9$  mmol / L ( $p = 0.046$ ). The GSJB decreased the time to swim 50 meters free in 4 of the six repetitions of the performance test by 1.56sec ( $p < 0.05$ ), and the GSH was greater in the GNS group after the RLA stimuli ( $4.9$  vs.  $7.8 \mu\text{M} / \text{mL}$ , respectively,  $p = 0.045$ ). **Conclusions:** These results suggest that beetroot juice supplementation favors exercise adaptations, improving lactate tolerance during stimuli of lactate resistance in master swimmers. Likewise, the stimulation of lactated exercise without the use of exogenous antioxidants can induce a response in endogenous antioxidant systems. **Relevance:** Our results show the benefits of including intense stimuli in exercise programs to favor the endogenous antioxidant response in non- elite active people during the aging process that can also help improve inflammatory states induced by obesity or sedentary lifestyle. On the other hand, support is given regarding the use of beet juice in the physical-sports performance of moderately trained adults.

**Keywords:** beetroot, Physical activity, Antioxidants, Physical performance.

**Abstract code:** 12



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# Lead and chrome particulate matter concentrations in a gymnasium located next to a vehicle roadway

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Rev Bras Ativ Fis Saude 26(suppl 3):25

**Background:** The better living conditions of people with a high-income level could favor health care as the practice of physical activity while belonging to a low socioeconomic level would negatively influence the lifestyle of older adults. **Aims:** To determine the association of the level of physical activity and the economic quintile in older adults of Azuay-Ecuador. **Methods:** Cross-sectional study in 188 urban and 212 rural elderly in the province of Azuay, in which anthropometry was performed; The Physical Activity Questionnaire was applied in its short version (IPAQ-SF), and the INEC socioeconomic level stratification questionnaire, after obtaining informed consent. Descriptive statistics were used, such as frequencies, percentages, measures of central tendency (mean) and dispersion (standard deviation), Odds Ratio (OR) with 95% CI for the association and chi-square statistical significance with its p-value. **Results:** The average age was 77.1 ( $\pm$  7.7) years; with low physical activity or inactivity there was greater obesity (36.5%), and with moderate and high physical activity the BMI was normal (76.5%); economic quintile 4 and 5 (low socioeconomic level) (60.5%) was prevalent; which were associated with 42% of physical inactivity in urban population, although it was not significant and in rural population 81.3% of physical or low inactivity; having as a level of education until primary was associated with 74% of physical inactivity in urban population (OR = 2.35; 95% CI 1,232-4,496; p = 0.008), and 94% in rural population although it was not significant (OR = 1.18; 95% CI 0.320-4.380; p = 0.799). **Conclusions:** Older adults with good economic status and higher educational levels would have more possibilities of accessing physical activity programs and consequently a healthy lifestyle. **Relevance:** The Inter-American Convention on the Protection of the Human Rights of Older Persons in its Article 3 states among its general principles: (...) g) Physical, economic and social security; for which the States Parties committed themselves to (...) j) Promote and strengthen research and academic training; in addition to the right to recreation, physical activity, recreation and sports; Therefore, since health is an inalienable right of the elderly, it is necessary to know their real situation to achieve adequate policies and strategies that contribute significantly to improving their quality of life, such as the promotion of healthy aging guaranteed by access to various programs of physical activity, food and socio-economic protection.

**Keywords:** Physical activity, Older adults, Economic quintile, Social condition.

**Abstract code:** 34



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# Development of a mobile-app for the identification of places where physical activity is carried out in Bogotá

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Rev Bras Ativ Fis Saude 26(suppl 3):26

**Background:** The questionnaires are a simple and inexpensive way to evaluate physical activity. For some of them, procedures have been proposed to estimate total energy expenditure (TEE). However, in the Mexican adult population, the accuracy of such estimates is unknown. **Aims:** To evaluate the predictive capacity of questionnaires to estimate the GET of a sample of Mexican adults. **Methods:** A sample participated for convenience of 115 Mexican adults aged 18 to 45, with different occupations, levels of physical activity, physical condition and body weight. The TEE was measured by means of three evaluations: 1) indirect calorimetry at rest, 2) indirect calorimetry in the cardio-pulmonary stress test and 3) heart rate monitoring under conditions of freedom for one week. The TEE was estimated through the report of activities with the Laval questionnaire, the global physical activity questionnaire (GPAQ) and the Ainsworth method (i.e. metabolic equivalents). Correlation and concordance were estimated by means of Pearson (rp) and intraclass (ric) coefficients. Predictive ability was assessed with simple linear regression models, as well as with the Akaike information criterion (AIC). **Results:** The average TEE measured by indirect calorimetry and heart rate monitoring was  $2,229.01 \pm 577.0$  kcal; while the estimate was higher with the Laval questionnaire ( $2,693.8 \pm 718.6$  kcal) and lower with the GPAQ ( $2189.6 \pm 667.0$  kcal). The difference between the average of the TEE evaluated, and that of the estimate based on the questionnaires ranged between 29.1 and 464.7 kcal. The correlation between methods was moderated with the Laval questionnaire (rp = 0.593, p = 0.000), but low by the GPAQ (rp = 0.421, p = 0.000) and the Ainsworth method (rp = 0.479, p = 0.000). The questionnaires showed low concordance (ric = 0.42 to 0.45, p < 0.05) and predictive capacity (R<sup>2</sup> = 17.8% to 35.2%). The intercept differed statistically from the origin with the three methods ( $\alpha = 946.23$  to  $1430.48$  kcal / d, p < 0.050). The optimal method to estimate the TEE was through the Laval questionnaire ( $\Delta AIC = 7.44$  to  $10.23$ ). **Conclusions:** Although the questionnaires can be used to classify people according to their TEE, their accuracy is low. **Relevance:** It is recommended to develop a simpler TEE estimation questionnaire, with less estimation error and greater predictive capacity. The above can be useful for clinical evaluations and population studies.

**Keywords:** Questionnaires, Evaluation, Energy expenditure, Adults, Physical Activity.

**Abstract code:** 51



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# Innovative approaches to assess community-based physical activity programs the cases of Ciclovía and Recreovía of Bogotá

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Rev Bras Ativ Fis Saude 26(suppl 3):27

**Background:** High rates of obesity and increased sedentary time in children have direct consequences on the prevalence of noncommunicable diseases in adulthood. The school environment is an opportunity to combat these risk factors, and the importance of physical education class is relevant. **Aims:** To analyze the impact of the physical education class on the level of physical activity, energy expenditure and sedentary time in children in the first basic cycle. **Methods:** Non-experimental, cross-correlational study. The sample was intended for 46 students of the first basic cycle. BMI was measured, as well as physical activity, energy expenditure, and sedentary time with accelerometry in school hours with and without physical education class. The non-parametric Wilcoxon test was used to determine differences between school days ( $p < 0.05$ ). **Results:** During the day with physical education classes, schoolchildren on average presented a moderate level of physical activity (3.03 METs) and on the day without physical education classes a light level (2.32 METs). Students in the school day with physical education class increased levels of moderate physical activity ( $Z = -4.430$ ;  $p < 0.0001$ ), vigorous ( $Z = -5.403$ ;  $p < 0.0001$ ), very vigorous ( $Z = -3.940$ ;  $p = 0.0001$ ) and decreased sedentary time ( $Z = -4.149$ ;  $p < 0.0001$ ) regarding the day without physical education class. **Conclusions:** Even though during the day with physical education, schoolchildren have higher energy expenditure, less sedentary time, and more physical activity, these levels are insufficient according to international recommendations for health. **Relevance:** Based on an objective evaluation of the level of physical activity, energy expenditure and sedentary time in primary school students, it was observed that the energy expenditure during the day with physical education class is very close to the lower limit of the minimum requirement recommended internationally and, therefore, would not have the required impact on the health of schoolchildren. Continuous and intensified efforts are required to develop strategies specifically focused on reducing sedentary time during the school period, and prescribing moderate to vigorous physical activity according to the characteristics of the current child population. These measures will undoubtedly contribute to improving the quality of life related to children's health and reducing the prevalence of noncommunicable diseases in adulthood.

**Keywords:** Physical activity, Inequity, Gender.

**Abstract code:** 15



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## FLASH ORAL PRESENTATIONS

### Topics:

Physiology

Obesity and non-communicable chronic diseases

Measurement and surveillance

Children and adolescents / Barriers and facilitators

Barreras y facilitadores en adultos

Urban settings and built environment

Active transport

Interventions and programs

Public policy



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# Identifying health risks in individuals with no physical continioning using the Five Minutes Shaper-type apparatus. A Biomechanical Analysis

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Rev Bras Ativ Fis Saude 26(suppl 3):29

**Background:** The studies about built environment are very important in Latin American cities to understand the physical activity correlates. **Aims:** The objective of this study was to examine the relationship between built environment variables and physical activity in leisure time in adults living in Sao Paulo city, Brazil. **Methods:** This study was a cross-sectional analysis that used Sao Paulo Health Survey dataset (n=3,145 adults). The physical activity in leisure time was evaluated by the International Physical Activity Questionnaire long version. The built environment variables were obtained by municipal official registration denominated GEOSAMPA and we could the total of green areas (parks, squares), public recreation centers, and the bike paths. We geocoded the addresses of the residences and created buffers (500m, 1,000m) around the residences to verify the number of green areas, the number of public recreation centers, and kilometers of bike paths. We calculated the median for each built environment variables group (green areas, public recreation centers, and bike paths) and the people that lived in buffers that were above the median had score=1 and the people that lived in buffers were equal or below had score=0. We worked with the walking, moderate, and vigorous physical activity in leisure time separately (dependent variables) and the built environment variables group like independent variables, separately for males and females. We used a logistic multilevel model account clustering by census tract and households and adjusted by age, education, time lived in the residence and place where people living. **Results:** The males that lived in 1,000m buffers above the median score of green areas had more likelihood for vigorous physical activity in leisure time (OR= 2.07 CI95%1.37-3.12). The males that lived in 500m buffers above the median score of bike paths had more likelihood of walking in leisure time (2.51 CI95%1.27-4.97). We did not find significant results for females. **Conclusions:** The built environment variables like green areas and bike paths were associated with physical activity in leisure time in male adults. These results are important to discuss healthy environments and to promote physical activity in leisure time in megalopolis like Sao Paulo city. **Relevance:** These results are important to discuss healthy environments and to promote physical activity in Latin American cities.

**Keywords:** Built Environment, Physical Activity, Leisure Time, Adults, Sao Paulo.

**Abstract code:** 57



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# Body composition, body fat, muscle mass and maximum oxygen uptake among polytechnic employees and professors from Ecuador

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Rev Bras Ativ Fis Saude 26(suppl 3):30

**Background:** “Physically-Active Lessons” (PAL) are school-based interventions in which children perform short bouts of physical activity (PA) during regular lessons. They can be incorporated into the curriculum, are generally well accepted by school personnel and teachers and have shown to increase PA and learning. In 2017 we developed and pilot-tested a PAL program called “Inicio mis clases activamente” (IMCA) for Chilean first-graders, in which teachers conduct every day games associated with the curriculum of 7 subjects at the beginning of the first lesson, with the goal of getting children engaged in 15- minute bouts of MVPA. **Aims:** To evaluate the process and outcomes of IMCA. **Methods:** Initially, we designed 240 cards (including one game each) with the collaboration of PE and regular teachers and anthropologists, considering the most popular games and evaluating them with focus groups. They were tested in first-grade students from 16 schools in Santiago. PE and school teachers evaluated the time and feasibility of implementing each game. We determined barriers and facilitators to implementation using semi-structured interviews applied to 14 teachers (out of 16). In 8 schools (n=556 students), we compared school time MVPA (with accelerometers) at baseline and 4 months later (in days with and without IMCA) on the same children, using test of proportions. **Results:** The final set includes 120 cards. IMCA was implemented 50% of the time with an average duration of 14 min (SD: 5). Over 90% of the time, teachers felt competent to conduct the games, children understood the instructions and enjoyed the activity. The main facilitators included: teachers practicing PA, support of principal and school staff, conducting the games inside the classroom. The main barriers were teacher’s workload and the indication to conduct IMCA during the 1st lesson. Comparing MVPA at follow-up (school day with IMCA) with baseline MVPA (with no IMCA), it increased by 1.5 and 1.2 percentage points in boys and girls, respectively. **Conclusions:** The set of cards (games) is well liked by teachers and students and is feasible to implement. Preliminary results suggest these games are effective in increasing MVPA during school time, although longer follow-ups are needed to assess the validity of these findings. **Relevance:** PAL are increasingly being implemented. IMCA can be adapted to be applied in Chilean children attending other grades as well for children from other Latin American countries.

**Keywords:** Active lessons, Process, Barriers, Facilitators, Outcomes.

**Abstract code:** 37



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# Impact of the adapted Farklet method on Balb/c mice health during the consumption of commercial caloric drinks

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Rev Bras Ativ Fis Saude 26(suppl 3):31

**Background:** Methods for evaluating physical fitness have had an important improvements, however they have been scarcely used and validated in Latin American regions. Thus, available reference values for field tests are established in populations with different physical and morphological characteristics to Latino populations. **Aims:** To establish normative values for categorizing the level of physical fitness in terms of cardiorespiratory capacity, musculoskeletal capacity and motor ability in Ecuadorian children and adolescents, using the Alpha-Fit test battery. **Methods:** A cross-sectional study was conducted between October 2018 and March 2019 in school age children aged 9 to 12 years from 20 schools in Cuenca-Ecuador. Physical fitness components were measured using the extended version of the Alpha-Fit test battery (tests: handgrip strength, standing broad jump, 4 x 10 m shuttle run test, and the 20 m shuttle run test). Participant characteristics were described using descriptive statistics. Also, the normative values by sex and age were estimated using percentiles (5, 15, 25, 50, 75, 80, 95, 99) with their corresponding curves. Finally, parametric and non-parametric tests were used to test sex differences in each test. **Results:** From a sample of 1,028 participants, we used a subsample of 604 presenting a normal body mass index (BMI). In this subsample, the mean age was of  $10.4 \pm 1.1$  years, 53% were females and 53.2% attended public schools. Regarding physical fitness tests, males presented a better average performance in handgrip strength (kg) ( $10.9 \pm 3.9$  vs  $10.3 \pm 3.5$ ,  $p=0.14$ ), standing broad jump (cm) ( $130.2 \pm 17.3$  vs  $119.8 \pm 16.9$ ,  $p<0.001$ ), 20m shuttle run test ( $VO_{2max}$  ml/kg/min) ( $42.2 \pm 3.3$  vs  $40.6 \pm 2.7$ ,  $p<0.001$ ) and 4 x 10 m shuttle run test (sec) ( $13.0 \pm 1$  vs  $13.8 \pm 1.1$ ,  $p<0.001$ ). Percentile tables and their corresponding curves showed better physical fitness levels as age increased, regardless sex. **Conclusions:** This study establishes for the first time normative values for evaluating the physical fitness in school age Ecuadorian populations. More similar studies are needed to improve the accuracy of normative values using larger samples. **Relevance:** This first study in Ecuador and one of the few in Latin America, may serve for the development of regional surveillance tools, which are needed for the design of health interventions aiming to improve physical fitness among children and adolescents.

**Keywords:** Alpha-fit, Normative Values, Physical Fitness, Children.

**Abstract code:** 70



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# Caloric intake, energy expenditure and somatotype of combat athletes from the national selection in Managua, Nicaragua

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Rev Bras Ativ Fis Saude 26(supl 3):32

**Background:** Pedagogy students in Physical Education have similar characteristics to those of other careers in eating habits, but differ in the amount of physical activity, due to the nature of their professional training, which affects their body composition is different. Studies show that the university population, in general, has sleep disorders, but in Latin America objective information about the hours they sleep is scarce; also the one that describes how sleep behaves along with body composition, in university students at different levels of the curriculum. **Aims:** The objective of this work is to determine the differences between body composition and sleep hours of students of Physical Education Pedagogy of a Chilean university. **Methods:** An analytical cross-sectional study was carried out that included 120 subjects divided into 4 groups according to cohort (1st year = 36; 2nd year = 28; 3rd = 38 and 4th = 18). Body composition was obtained by means of the 5 component anthropometric method. The hours of sleep were determined by accelerometer (Geneactiv, original model). Descriptive statistics were calculated; For the comparison of variables between cohorts, the one-way ANOVA analysis of variance and the Tukey multiple comparisons test were applied as post hoc. **Results:** Students with fewer hours of sleep are those of 1st year (402 minutes) and those of 4th year is the group that has more hours (497 minutes), observing significant differences between these groups ( $p = 0.004$ ). Regarding muscle mass, no significant differences were observed between groups. For the adipose tissue, the students of the 2nd year obtained lower values (27%) and those of the 4th the highest (30.8%), observing significant differences between these groups ( $p = 0.027$ ). **Conclusions:** It is concluded that 1st-year students have less sleep and that this varies in the upper age groups. About body composition, the only significant difference was observed for adipose tissue, with the highest values being found in the 4th year group. **Relevance:** This study provides objective information about these variables in students of Physical Education Pedagogy, which is scarce and needs to be deepened at the Latin American level, which constitutes an input to create intervention programs that seek to improve health and quality of life in university students.

**Keywords:** Body composition, Hours of sleep, Accelerometry.

**Abstract code:** 38



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# Relationship between sedentary behaviors and respiratory capacity of white-collar university employees

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Rev Bras Ativ Fis Saude 26(suppl 3):33

**Background:** Moderate to vigorous, aerobic physical activity (MVPA) has been linked with reduced risk of several types of cancer. Yet, the association between muscle-strengthening activities and cancer is not well-established. **Aims:** In this study, we examined the association between resistance training and total and site-specific cancer risk. **Methods:** A prospective cohort study followed 33,805 men from the Health Professionals Follow-up Study from 1992 to 2012. Participants were 40 years or older and free of cancer at baseline. Average weekly amount of resistance training (e.g., weight lifting/weight machine) was reported in 1990 and every two years thereafter. We calculated cumulative average of resistance training using all available and added a 2-year latency period to reduce potential bias due to reverse causation. Cancer cases were ascertained via biennial follow-up questionnaires through 2014. We included cancer sites that had around 100 cases diagnosed in the period. We performed Cox regression model to estimate hazard ratio (HR) and 95% confidence intervals (CI) for the association of resistance training with total and site-specific cancer risk adjusted for covariates and MVPA. We examined the joint association of resistance training (yes or no) and total MVPA (0-8.9, 9- 41.9, and  $\geq 42$  metabolic equivalent of task - MET-hours/week) with cancer risk. **Results:** During 521,221 person-years of follow-up, we documented 5158 cancer cases. Resistance training was not associated with total cancer risk (HR 1.01 per 1-hour/week increase; 95% CI 0.97-1.05). We found an inverse association between resistance training and risk of kidney cancer (HR 0.77 per 1-hour/week; 95% CI 0.58, 1.03) and bladder cancer (HR 0.80 per 1-hour/week increase; 95% CI 0.66, 0.96). On the other hand, we observed a positive association for colon cancer (HR 1.12 per 1-hour/week increase; 95% CI 1.02, 1.22). Moreover, for the same amount of total MVPA, individuals engaging in both resistance training and aerobic activities showed stronger inverse associations with bladder and kidney cancers, compared to those engaging in aerobic activities only. The joint association of resistance training and MVPA indicated null findings for colon cancer. **Conclusions:** Resistance training was associated with a trend toward lower risk of kidney and bladder cancer. Combined resistance training and aerobic MVPA may provide additional risk reduction of these cancers. **Relevance:** Physical activity, including muscle-strengthening activities, might be relevant to cancer prevention strategies in Latin American countries. However, prospective cohort studies are needed to confirm our findings in these countries.

**Keywords:** Resistance training, Cancer risk, Prospective cohort, Epidemiology.

**Abstract code:** 3



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# Isokinetic strength of lower limbs and grip strength in relation to cardiometabolic risk markers

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Rev Bras Ativ Fis Saude 26(suppl 3):34

**Background:** In the Barrios Unidos neighborhood, various strategies have been carried out to promote healthy habits. The Mayor's Office of Bogotá through the District Institute of Recreation and Sports (IDRD) and the Recreovía de Bogotá, have carried out programs that seek to generate the knowledge necessary to adopt healthy habits, as well as understanding about the problems of smoking, alcoholism, poor diet and sedentary lifestyle. Specifically, the Local Development Plan "BUILDING FUTURE 2017 – 2020", establishes different programs that seek to promote the practice of physical activity through the Recreovía, which involves 81 people per day. **Aims:** To characterize the life habits of adults between 18 and 55 years old who attend the Recreovía at "Los Novios Park" within the "Barrios Unidos" neighborhood in the city of Bogotá. **Methods:** A random sample of 10 people were taken, Interviews, FANTASTICO test, PARQ-YOU, and IPAQ were applied. Categories: Social, epidemiological, behavior and environment, educational, administrative and political. **Results:** The results show that 80% of the population was physically active since they regularly attend group classes where perform musicalized physical activity for more than 30 minutes a day. Regarding nutrition, 70% of users say they do not have frequent habits of eating hypercaloric foods. Tobacco use is low in this population; only 10% carry out this activity regularly. Similarly, this population claims not to consume alcohol, and only 40% drink occasionally. 90% have good sleep and rest habits. **Conclusions:** We find a population that is most physically active, has good eating habits, such as proper nutrition, sleep, rest, low tobacco and alcohol consumption, feel happy and satisfied with their lives. Therefore, the Recreovía of Bogotá, specifically in the locality of Barrios Unidos, generates behavioral changes that allow for good healthy lifestyle habits and thus prevent cardiometabolic risk factors. All these factors have a positive impact on the promotion and good healthy lifestyles that users who have attended the Recreovía de Bogotá have had. **Relevance:** To identify aspects to be taken into account to improve the promotion of healthy habits and prevention of habits harmful to health.

**Keywords:** life habits, physical activity

**Abstract code:** 6



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# Effect of beetroot juice on glutathione and performance of master swimmers exposed to lactate resistance stimuli

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Rev Bras Ativ Fis Saude 26(supl 3):35

**Background:** The WHO (2019) defines health as “a state of complete physical, mental and social well-being”, as well as nutrition, physical exercise, and health prevention are part of healthy lifestyles. On the other hand, some diseases alter this state of well-being. According to Vélez, Gil, Avila, and Lopez (2014), arterial hypertension, smoking, diabetes, are risk factors that are associated with cardiovascular disease and are responsible for 32 million coronary events. On the other hand, some programs help prevent cardiovascular risk and promote the practice of physical activity, such as the “RECREOVÍA” program that is developed in the city of Bogotá (IDRD, 2015). **Aims:** To characterize the lifestyles in adults between 18 and 55 who attend the Recreovia program in the Atahualpa Park in Bogotá. **Methods:** A cross-sectional mixed-method study was conducted, where informed consent was applied, clinical history, and quality of life were considered. In addition, instruments such as PAR- Q, IPAQ, FANTASTICO, and interview as a qualitative tool were applied to participants in the Recreovia program. **Results:** Quantitative data were analyzed through Excel (2016) and qualitative data through Atlas.ti (2018) software. According to the population evaluated, 37% are diagnosed with cardiovascular problems associated with hypertension and metabolic diseases, taking into account the average age of 40.2 years. Finally, 87% are in the “good job” stage according to the FANTASTICO test regarding lifestyles. On the other hand, the qualitative study showed categories such as physical activity and quality of life, reinforcing the importance of physical exercise for optimal health conditions. **Conclusions:** The presence of cardiovascular risks in the population is evident. However, users state that they have a “pretty good” quality of life according to the test and, also, 87% of participants perform physical activity for 30 min every time. **Relevance:** This research project contributes to literature, specifically in the area of healthy living habits and physical activity, to prevent chronic noncommunicable diseases.

**Keywords:** Lifestyles, Risk factor, Physical activity, Recreation.

**Abstract code:** 5



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# The importance of nutrition of the pregnant woman and the fetus for the promotion of health and quality of life

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Rev Bras Ativ Fis Saude 26(suppl 3):36

**Introduction.** The gestational period is marked by a dynamic anabolic state, promoting continuous adjustments in relation to the nutritional demand of macro and micronutrients. The expected weight gain of the eutrophic pregnant woman is around 15 to 20% of her pre-gestational weight, and such monitoring is of fundamental importance in order to avoid deficiency or excess. Excess maternal weight can lead to hypertensive syndrome, gestational diabetes, obesity, fetal macrosomia, and complications in childbirth and the puerperium. Low maternal weight can impact fetal growth and development. Studies show that regular physical exercise during pregnancy can promote physical and psychological benefits, but few pregnant women have this knowledge or are confident in performing such practices. **Objective.** To review the impact of regular physical activity and healthy eating to promote maternal and child health. **Method.** Medline and Pubmed databases for the period from March to June 2021 were used. **Results.** Maternal nutrition had a direct impact on the baby's health. Thus, all food groups should be considered, prioritizing fresh and minimally processed foods. It is also essential to encourage the consumption of healthy fats, such as omega-3 (LCPUFA) for adequate fetal neurological development. As for weight gain, it was not recommended to carry out a restrictive diet or weight loss during this period, which could harm the baby's correct weight development. In addition, recent meta-analysis studies relate the positive effect of regular exercise on the maintenance and weight gain of pregnant women. The practice of exercise for overweight and obese pregnant women must be guided and supervised and must be associated with nutritional guidelines, in order to promote weight control. In addition, several studies have shown that regular physical activity during pregnancy reduced the risk of gestational diabetes by 50%. As for preeclampsia, there is little evidence on such a protective effect. **Conclusion.** The practice of regular maternal oriented physical activity positively impacted the health of the pregnant woman, with no negative evidence for the offspring. In addition to not being associated with preterm labor or low birth weight. The nutritional monitoring of pregnant women is essential for the maintenance of their needs, in order to promote adequate weight gain. The results suggest that nutritional monitoring and guided practice of physical exercises are related to health promotion during and after pregnancy. **Relevance.** The adoption of healthy lifestyle habits during pregnancy promotes maternal and child health and prevents unfavorable postpartum outcomes, in addition to reducing the morbidity and mortality of this population.

**Keywords:** Pregnancy, Physical activity, Health promotion.

**Abstract code:** 8



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# Physical activity and immunology in the elderly

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Rev Bras Ativ Fis Saude 26(suppl 3):37

**Background:** Reliable and valid measures of sedentary behavior are crucial in scientific research to determine possible health risks and establish effective interventions. **Aims:** To evaluate the reliability and validity of a self-reported questionnaire to determine the total sedentary time and in specific domains, in Spanish-speaking adults, based on the SIT-Q-7d (Last 7-d Sedentary Behavior Questionnaire). **Methods:** A validation study was carried out in 130 adults (66 nurses of a hospital and 64 administrative employees of a university) in Cuenca-Ecuador. The SIT-Q-7d questionnaire translated into Spanish and submitted for review by experts before its application was applied. To assess the reliability, the questionnaire was administered twice to 66 nurses, with a difference of between three to six weeks between the first and second measurements. The test-retest reliability of the different items of the questionnaire was analyzed using the intraclass correlation coefficient (ICC). To assess the validity of the criteria, administrative employees ( $n = 64$ ) used Actigraph wGT3X-BT triaxial accelerometers seven days before the application of the questionnaire. The agreement between the validation criterion and the questionnaire was evaluated with the Spearman correlation coefficient. **Results:** The reliability of the test-retest for the total self-reported sedentary time was moderate ( $ICC = 0.56$ , 95% CI: 0.25-0.74). The ICC for specific domains meals, transportation, occupational, in front of the screen (watching TV or using the computer in a non-occupational way), and other activities (reading, in housework, listening to music) varied between 0.32 and 0.77. The domains with greater reliability were sedentary reading time ( $ICC: 0.77$ , 95% CI: 0.62-0.86) and occupational sedentary time ( $ICC: 0.70$ , 95% CI: 0.50-0.82). The sleeping time presented good reliability ( $ICC: 0.70$ , 95% CI: 0.49- 0.82). Spearman's correlation between total self-reported sedentary time and that measured by accelerometer was moderate ( $\rho = 0.31$ ,  $p = 0.04$ ). **Conclusions:** The sedentary behavior self-report questionnaire shows acceptable reliability and validity. This questionnaire is useful for obtaining information on the context of sedentary behavior in Spanish-speaking adults, and especially if you want to deepen the occupational environment. **Relevance:** Numerous questionnaires are available for measuring sedentary behaviors. However, most of them have not been translated into Spanish or adapted to Latin American reality. In addition, the SIT-Q-7d questionnaire is currently being widely used in epidemiological investigations. However, few studies have analyzed its validity of criteria.

**Keywords:** Sedentary, Questionnaire, Accelerometer, Validity, Reliability.

**Abstract code:** 33



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# Benefits of Physical Activity to the immune system of patients with breast cancer

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Rev Bras Ativ Fis Saude 26(suppl 3):38

**Background:** Between 1996–2007 the number of deaths due to non communicable diseases increased in Brazil, but age-adjusted mortality decreased. The causes of the decrease in deaths caused by cardiovascular and respiratory diseases could be the different public policies implemented (Schmidt et al., 2011). In 2010, with the beginning of the activities in the School of Physical Education and Sports Ribeirão Preto (EEFERP) in the University of São Paulo (USP), we followed up on the research interests that Brazil had been developing, by implementing actions related to physical exercise, health and ageing. The focus was on improving physical fitness and preventing and controlling cardiovascular disease risk factors (CVDRF). **Aims:** To study the association between fitness, CVDRF and socio-economic aspects among older adults. To analyze the effects of an extension program based on a multi-component training for physical fitness and CVDRF. **Methods:** First, a cross-sectional study with 213 participants ( $\geq 50$  years of age; 76,5% women) was conducted. Evaluations: questionnaires, motor tests, anthropometric measures, blood pressure, blood glucose and lipid profile. Then, we carried out a longitudinal study with 171 participants ( $\geq 50$  years of age; 84,2% women) with an intervention consisting on a multi-component training (several motor capacities), twice per week, 90 minutes per session. Evaluations: the same as the ones used in the cross-sectional study plus oxidative stress, nitrites and genotyping tests. **Results:** In the cross-sectional study, some factors were better associated with physical fitness and CVDRF: participating in other types of exercise in addition to waking; time engaging in physical exercises (at least six months); supervision (presence of a physical education professional). Additionally, these results were associated with higher income and scholarship. Regarding the longitudinal study, improvements in physical fitness and all CVDRF were observed with influence of some genetic variants in this effect. **Conclusions:** The best results in physical fitness and CVDRF among participants were associated with the amount of physical exercises done, the time engaging in physical exercises, supervision, income and scholarship. The multi-component training promoted improvements in physical fitness and CVDRF and genetic variants influenced this effect. Relevance: This project provided relevant knowledge on “Physical activity and health” with a progression in the complexity of the studies. Future perspectives include the development of community projects. **Relevance:** NA

**Keywords:** Physical fitness, genetics, risk factors, cardiovascular disease, physical activity.

**Abstract code:** 68



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# Analysis of the benefits of ballet for pregnant women, during pregnancy, childbirth and postpartum

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Rev Bras Ativ Fis Saude 26(suppl 3):39

**Background and objective.** This study aims to analyze, from a bibliographic review, the benefits of classical ballet for pregnant women, both during the gestational period and at the time of delivery and postpartum, targeting both beginner and professional dancers. **Results.** Research indicates that only 4.7% of pregnant women in Brazil perform physical activity during the entire gestation period, and only 12.9% perform some physical activity during this period. Until 1985 there was a fear about prescribing physical activities during pregnancy, but to date, we already know that physical activity during pregnancy can be extremely beneficial. Contrary to what many still believe, pregnancy is not a pathological or unhealthy state where the woman must remain at rest, but a moment where she must take care of herself and her well-being. This research area began seeking to understand all the changes resulting from pregnancy in the woman's body, including the metabolic, hormonal, cardiovascular, and respiratory systems, musculoskeletal and central nervous systems. Soon after, the benefits of Classical Ballet for its practitioners were studied, including cardiovascular, hormonal, psychological, neural, musculoskeletal, metabolic, flexibility, respiratory, and body awareness conditioning. A correlation was then established between these benefits and the woman's needs during pregnancy. The benefits of music for the fetus were also studied, and it was possible to perceive through the literature review that the fetus already hears the sounds of their surroundings acutely from the sixth month of gestation, and is able to distinguish sounds, react to them and also memorize them. **Conclusion.** The practice of classical ballet during the gestational period can be extremely beneficial, not only for the mother but also for the baby. There is a huge shortage of literature on this subject; however, dance schools provide this modality for their students, without the necessary knowledge about the care that must be taken, risking both the woman and her baby. Also in the professional world, many dancers stop getting pregnant so as not to stop their practice and thus lose some of their performance. **Relevance.** This work aims to help both dance professionals and dancers to better understand the practice of ballet during this magical period in their lives.

**Keywords:** Ballet, Gestation, Pregnancy.



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**1er Congreso  
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# Evaluation of adherence to diet and exercise in patients with diabetes and arterial hypertension as prevention of complications

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Rev Bras Ativ Fis Saude 26(suppl 3):40

**Background:** The change from high school to university may represent changes in the student's lifestyles due to the academic burden involved. This could have an impact on the increase in body mass index (BMI) and a decrease in physical activity levels (PA) and the impact on your health status. In the same vein, grip strength (GS) is an early predictor of cardiometabolic risk. Grip strength will be determined by the type of physical activity that is performed. **Aims:** To evaluate the BMI, PA and GS in first-year students of the degree in Nutrition of the Model University of Merida, Yucatan. **Methods:** The study was observational, cross-sectional, prospective, descriptive, which included a non-probabilistic sample for the convenience of students enrolled in the first semester of the Bachelor of Nutrition in the period August-December 2019, without diagnosed chronic disease, pathologies that will affect your limbs, amputations, non-pregnant women and that you will sign your informed consent. Weight, height, and BMI were calculated, GS was evaluated with a Takei 5401 dynamometer, and physical activity was determined using the International Physical Activity Questionnaire (IPAQ). BMI classified according to the WHO and the prehensile force, according to Bustos-Viviescas (2018). Descriptive statistics and Pearson's correlation were performed to analyze the data using SPSS version 20 software. **Results:** 35 subjects were included, 65.7% were women. The mean age was  $19.3 \pm 1.4$  years, height  $1.60 \pm 0.11$  meters, GS  $27.9 \pm 11.2$  kg and the median PA minutes were 600 in the last 7 days. 51.4% had normal BMI, 5.1% underweight and 42.9% were overweight. Regarding the PA, 5.7% was low, 14.3% moderate and 80% high. 45.7% had poor or poor GS, 20% regular and 34.4% was good, very good or excellent. Correlation was found between GS and weight ( $r = 0.792, p < 0.001$ ), height ( $r = 0.744, p < 0.001$ ), BMI ( $r = 0.557, p = 0.001$ ), minutes of PA per week ( $r = 0.441, p = 0.008$ ) and age of the participants ( $r = 0.391, p = 0.020$ ). **Conclusions:** Although 80% of the students reported high physical activity, 45.7% had deficiency or poor GS, and 42.9% were overweight. **Relevance:** In addition to the importance of physical activity in the BMI, it is important to evaluate the GS as a predictor of cardiovascular risk.

**Keywords:** BMI, physical activity, grip strength.

**Abstract code:** 50



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**1er Congreso**  
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# Physical activity and its relationship with metabolic variables in Costa Rican adult women

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Rev Bras Ativ Fis Saude 26(suppl 3):41

**Background:** Recent findings suggest that the practice of physical activity (PA) in Mexico is determined by five key Built Environment (BE) constructs: streets, parks, transit, aesthetics, and safety. The purpose of this study was to determine how supportive the policy environment of Mexico City is for active living, and how it can be improved. **Aims:** 1. Identify the currently valid urban policy instruments in Mexico City related to the 5 key BE constructs through a systematic literature review. 2. Analyze the content of the public policy instruments that relate to these key constructs. **Methods:** Policy documents were identified through a comprehensive, and systematic, desk review of the official websites of the main government institutions and NGOs. Policy documents were categorized into five levels of territorial jurisdiction. Systematic content analysis for the BE constructs was conducted using the "Urban Policy Indicators Data Collection Survey", to evaluate the relation between urban policy and health. International guidelines' -for activity-friendly urban settings- concepts and keywords were used to analyzed the documents for 1) presence of streets and sidewalks, 2) the presence of Parks, 3) presence and access to public transit, 4) public safety and 5) aesthetics, using the software NVivo 12. **Results:** A total of 79 urban public policy instruments were found, however, content analysis could be conducted only on 41 documents. The analysis showed that none of the documents have as an explicit objective the promotion of healthy and active lifestyles. A low level of congruence among the different government levels was found, which can hinder the compliance of the documents. Although content analysis reveals that the 5 key BE constructs are present in several documents, there is a critical lack of technical specification, with low to no definition of projects, deadlines, budgets, or evaluation plans/methods. **Conclusions:** This is the first in-depth examination of urban policies concerning the key BE constructs known to influence PA in Mexico. Findings suggest that the lack of specificity in terms of defined actions, measurable goals, and allocation of resources, results in the sub-optimal implementation of policies that may promote active living. **Relevance:** Our methodology can be used to assess urban policy documents in other Latin American countries that have a similar political system. Understanding the current urban policy state can have impacts expected to extend beyond health, as they could improve the quality of life and social capital.

**Keywords:** Built environment, Urban health, Public policy, Physical activity, Active lifestyles.

**Abstract code:** 9



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# Moral awareness of self-care and physical activity in children with obesity

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Rev Bras Ativ Fis Saude 26(suppl 3):42

**Background:** The second cause of death in the state of Mexico is heart disease. Studies indicate that adequate physical exercise prevents risks of Cardiovascular Diseases (CVD). Sedentary lifestyle or physical inactivity causes 6% of global mortality, and it is one of the main risk factors for chronic non-communicable diseases such as cardiovascular diseases, in addition to being the cause of approximately 30% of ischemic heart disease. **Aims:** To determine the association between the presence of cardiovascular diseases and physical exercise in adults over 35 years old. **Methods:** An analytical cross-sectional study was carried using people over 35 years old as the reference population, using non-probabilistic sampling. The sample size was 191 people. The study objectives were informed and they were invited to participate granting their verbal informed consent to participate. Socio-demographic data, heart rate, height, and weight were collected through a questionnaire. Data on frequency and intensity of physical exercise and CVD was also obtained. **Results:** Of the sedentary group, 50.6% registered the presence of CVD, in contrast to the active group whose presence of CVD was 39.3%. From 12 pathologies that were contrasted between both groups, cerebrovascular disease and valvulopathies had no presence in any group. Acute myocardial infarction, ischemic heart disease, and acute arterial thrombosis were more frequent in people from the active group. All the seven remaining pathologies were more frequent in the sedentary group. **Conclusions:** Sedentary people were more frequently with CVD, with hypercholesterolemia and hypertriglyceridemia being the closest pathologies to a significant value. More than half of the sedentary group had the presence of CVD, who had a greater presence in contrast to the active group; In this sense, the ones with the highest presence rate were women. **Relevance:** In Mexico, the number of people with cardiovascular diseases is high, as is the money that goes into the prevention and treatment of these diseases. It has become a public health priority as it is one of the main causes of mortality.

**Keywords:** Cardiovascular, Physical activity, Physical exercise.

**Abstract code:** 56



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**1er Congreso**  
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**en Actividad Física y Salud**



# Effect of a primary health care intervention in Mexican adults with overweight. Pilot test

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Rev Bras Ativ Fis Saude 26(suppl 3):43

**Background:** According to WHO, 60% of the population in the world does not get sufficient physical activity as to obtain health benefits. **Aims:** To establish the changes in body composition (body fat and muscle mass) and maximum oxygen uptake when applying 30 minutes of exercise, 3 days per week for 3 months among polytechnic employees and professors from Riobamba Ecuador. **Methods:** A sample of 121 polytechnic employees and professors realized a physical activity program, 3 days for 3 months for 30 minutes. We conducted a pre- post-intervention study evaluating anthropometry by bioimpedance and aerobic capacity in a treadmill with pulsometer and ACSM protocol. Exercise prescription used the maximum heart rate (MHR), work loads were calculated from 50% to 60% of the MHR. **Results:** The analysis was conducted using the statistical program R and applying a paired T- student test. Comparing baseline and final body fat resulted in a p value of 0,87 with improvements of 0,28%. Baseline and final muscle mass reached a p value of 0.42 with an increase of 1,35%. The VO2max achieved a p value of 0,06 and an increase of 2,45%. **Conclusions:** No changes were observed in body fat and muscle mass in the sample because the exercise type used improves health in the population; in contrast, exercise prescription for body weight reduction involves a larger duration of physical exercise and caloric restriction. VO2 max showed a pre- post intervention change, improving the ability and adaptation of the group of participants to execute aerobic exercise. We recommend conducting a study that controls the frequency of execution, because we infer that this would be a key parameter for achieving the desired results. Physical activity prescription among polytechnic employees and professors maintains regular body composition and pre- post intervention VO2max, however, no significant changes were observed, because this is a phase for exercise adaptation, in which prescription is not intended for body weight reduction. **Relevance:** Disseminating results that show improvements in physical fitness and their relation with health will keep moving forward research in Latin American populations. We aim to foster actions that promote healthy lifestyles among the population.

**Keywords:** Physical Exercise, Body Fat, VO2max, Body Composition.

**Abstract code:** 63



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# Early effect of a physical exercise program on functional capacity in older adult women with dynapenia

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Rev Bras Ativ Fis Saude 26(suppl 3):44

**Background:** The way we transport from one place to another influences physical activity (PA) levels and lifestyles. It is a modifiable behavior and an accessible way of increasing habitual PA levels of youngsters (Delisle Nyström et al., 2019). The Uruguayan PA report card for children and adolescents (Brazo-Sayavera et al., 2018) highlights the need of more information on active transport, especially among school-age children. This would allow the identification and implementation of public policies focused on security and aiming to adapt the environment for active transport. **Aims:** To analyze the time in active and motorized transport among school age children from a private center in Rivera (Uruguay) according to their perception of security from traffic. **Methods:** In this study a total of 66 school age children (47% girls) from a private institution in Rivera (Uruguay) were included. We used the SAYCARE questionnaire to report the time in minutes engaged in transportation. The time used for motorized vehicle transportation and the time used for bicycling or walking for transport were registered. We added walking and bicycling time to create the variable for active transportation. The question "Walking or jogging in the streets surrounding my home is not safe because of the traffic" was used to evaluate the perceived security from traffic. A descriptive analysis of time used according to responses of perceived security from traffic was conducted. **Results:** Time engaged in habitual transportation was higher among those using a motorized vehicle compared to those using active transportation, regardless perceived security perception from traffic ( $p < 0.01$ ). Those perceiving a safe neighborhood from traffic spent 3 times more daily minutes using a motorized vehicle than using active transportation. Those perceiving their neighborhood was not safe from traffic engaged in almost 4 times more daily minutes of motorized transportation than active transportation. **Conclusions:** This study presents the results of the first analysis on active and motorized transportation among school age children in Uruguay. Results indicate that the time in motorized transportation was higher compared to the time in active transportation, regardless perceived security from traffic. These results should be confirmed with a bigger representative sample, including other variables related to active transportation. **Relevance:** A context on this issue is established in Uruguay, promoting more research and different intervention strategies.

**Keywords:** Physical activity, Health, Built Environment.

**Abstract code:** 65



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# Effects of the Fallproof program on the balance of the elderly of a geriatric foundation

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Rev Bras Ativ Fis Saude 26(suppl 3):45

**Background:** White collar employees are characterized by multiple desk activities during their workday, many of them usually have purchasing power, physical culture and motivation to achieve physical activity recommendations for health. This raises the possibility of being active and sedentary at the same time. The association between sedentary behaviors and maximum respiratory capacity in economically active population has not been adequately explained. **Aims:** To analyze the association between sedentary behaviors and the respiratory capacity of white collar university employees. **Methods:** Descriptive correlational study in apparently healthy adults aged 30 to 60 years; without medical contraindication for the exercise, who agreed to participate voluntarily in the study. Acti-Graph™ wGT3X accelerometers were used around the hip for seven to nine days, the Sedentary Behavior Questionnaire and Rockport test were used. Personal characteristics and cardiovascular risk were included in the data card. Analysis with descriptive statistics and correlation tests. **Results:** Preliminary sample of 59 participants of 41.64 years (SD = 8.17). Forty-six percent reported achieving physical activity recommendations for health. All participants reported more than 10 hours of sedentary behavior during the week; On the weekend, women reported lower values than men [28.24 hours (SD = 5.24) vs. 10.07 (SD = 4.87),  $p = .179$ ]. The respiratory capacity was higher in men than women [39.84 ml/kg/min (SD = 6.73) vs 30.44 (SD = 8.76),  $p < .01$ ]. At least three of out ten participants had regular or poor respiratory capacity. Sedentary weekdays were associated with sedentary weekend time ( $r = .433$ ,  $p < .01$ ). Respiratory capacity was associated with age, cardiovascular risk burden and moderate to vigorous physical activity ( $r = -.336$ ,  $-.438$  and  $.400$  respectively,  $p < .05$ ). No association was found between sedentary behaviors and respiratory capacity ( $p > .01$ ). **Conclusions:** Sedentary behaviors prevail among white collar university employees both during and on the weekend. Moderate to vigorous physical activity increases respiratory capacity while higher age and cardiovascular risk decrease it. **Relevance:** The monitoring and control of health risks associated with sedentary work is an emerging issue to consider in national political agendas.

**Keywords:** Cardiovascular risk, Fitness, Sedentary behavior, VO2máx, Employees.

**Abstract code:** 11



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# Abdominal perimeter and motor coordination of Peruvian school-children

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Rev Bras Ativ Fis Saude 26(suppl 3):46

**Background:** The Academia da Saúde Program (PAS) was launched in 2011 by the Ministry of Health of Brazil as a health promotion strategy, for non-communicable chronic disease prevention, and for delivering care within the scope of Primary Care (AP). The program's actions take place in public health establishments in Brazil, known as hubs. According to one of the program's ordinances, the actions carried out in these spaces must be in accordance with the following axes: corporal practices and physical activities; delivery of care and healthy lifestyles; promotion of healthy eating; integrative and complementary practices; artistic and cultural practices; health education; and community planning, management and mobilization. **Aims:** To determine the total number of "corporal practices and physical activities" delivered at the Academia da Saúde Program centers (hubs) and registered through the e-SUS / Brazilian Primary Care system, in a specified time period. **Methods:** This research analyzed the "corporal practices and physical activities" carried out at the PAS centers (hubs). We searched for all activities recorded in the collective activity files, coded under the fields of health and health practices in the e-SUS / AP system. The search was restricted to activities implemented from January to October 2019. **Results:** The records show that within the period of time considered, the actions classified as corporal practices and physical activity represented 75.7% of those registered by the professionals who work in the hubs of the Academia da Saúde Program. **Conclusions:** These results highlight the predominance of actions of bodily practices and physical activity in the hubs of the Academia da Saúde Program. This number reinforces the importance of investigating which types of programming is being offered, and which health benefits are being sought for the users of the referred program. Understanding this will help improve the offerings of opportunities for physical activity in these primary health care establishments. **Relevance:** PAS is a national health promotion strategy, in which physical activity promotion offerings are amongst the most frequently implemented actions. This program is present in all regions of Brazil.

**Keywords:** Physical activity, Primary Care, Health Promotion.

**Abstract code:** 55



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# Exercise prescription in people with chronic renal failure

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Rev Bras Ativ Fis Saude 26(suppl 3):47

**Background:** The Physical Activity (PA) Guidelines for Americans issued by the US Department of Health and Human Services recommend that school-aged children engage in 60 minutes or more of moderate to vigorous PA (MVPA) a day. Hispanic children are less likely to meet the PA guidelines for a whole week compared to non-Hispanic white children. Consequently, Hispanic children are disproportionately burdened with overweight and obesity in the US. Identifying factors associated with meeting the PA guidelines is imperative to decrease disparities in unhealthy weight among Hispanic children. **Aims:** Identify factors associated with meeting the PA guidelines among primarily Mexican origin children in South Texas. Discuss how parental expectations may influence pediatric weight management. **Methods:** Participants were 209 overweight and obese children and their guardians who completed baseline assessments for the Health4Kids study in San Antonio, TX. We assessed average time per day in MVPA over the past week via accelerometry. We dichotomized MVPA as meeting or not meeting the PA Guidelines. We assessed parental outcome expectations for achieving a healthy weight, scored 0 "not at all" to 10 "very sure", greater scores signified higher outcome expectations. We also asked parents to report the number of days per week (i.e., 0 to 7 days) their child plays outside. Logistic regressions examined the relationship between child meeting PA guidelines, parental outcome expectation, and the number of days per week child played outside, controlling for age and gender. **Results:** Children were 8.7 years old and female (51.7%). Children whose parents believed that their child would succeed in achieving a healthy weight were more likely to meet PA guidelines (OR=1.20, p=.05). Children whose parents recalled a greater number of days per week that their child played outside were also more likely to meet PA guidelines (OR=1.16, p=.07). **Conclusions:** Parental outcome expectations for achieving a healthy weight and number of days per week that children played outside were associated with children meeting PA guidelines. Parents may be more likely to rate their children as being able to reach a healthy weight if the children are already active. **Relevance:** Pediatric weight management interventions for Mexican origin children in South Texas must foster parents' confidence in their children's ability to reach a healthy weight. Further research to explore associations with meeting PA guidelines can potentially identify opportunities for interventions to promote a healthy weight.

**Keywords:** Physical activity, Parental expectation, Children.

**Abstract code:** 49



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# Differences on body composition and biochemical parameters between practitioners and non-practitioners of soccer

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**Background:** ENSANUT 2018 reports a prevalence of overweight and obesity in school age children of 35.6%, similarly 17.2% of children are classified as physically inactive according to WHO criteria. Systematic reviews and meta-analysis identify elementary school as an area of opportunity to promote healthy and active lifestyles, because of its wide coverage it is the ideal means to promote and develop healthy habits and attitudes. In Mexico, the physical education program from the Ministry of Education considers body and health attention in the graduation profile, aiming that all students identify physical characteristics and abilities and recognize the ones of their peers, engage in physical activity derived from motor play and know what is good for health. **Aims:** To evaluate the effect of a physical education program of moderate to vigorous intensity on the aerobic capacity and body fat of overweight and obese children. **Methods:** A total of 74 fifth-grade students diagnosed as overweight or obese were randomly assigned to an intervention group (n=38) participating in a physical education program of moderate to vigorous physical activity, twice per week for a 10 month period and measure with ActiGraph-GT9X accelerometers, and a control group (n=36); aerobic capacity was evaluated before and after the program with the Navette course test of 20 m calculating their maximum oxygen uptake (VO<sub>2</sub>max), body fat percentage was measured through mid- tricep and calf skinfolds, using the Slaughter et al. (1988) equation. **Results:** The inferential statistical analysis was conducted using an ANOVA 2X2 test, showing significant differences (p<0,05) when comparing before and after the intervention and the inter-group interaction of VO<sub>2</sub>max (p=0.01) and body fat (p=0.05). **Conclusions:** Moderate to vigorous physical activity in physical education was able to improve the aerobic capacity and reduce body fat in overweight and obese children. **Relevance:** We consider that physical education could consider moderate to vigorous physical activity as the basis, and consider pedagogical elements to lead physical education classes intentionally, generating more opportunities to participate in motor actions in overweight and obese children. In their guide for policy makers working in physical education UNESCO establishes investing in health through physical education.

**Keywords:** Physical education, School, Overweight, Obesity, Aerobic capacity.

**Abstract code:** 74



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# TV time versus sedentary behavior associated with overweight and obesity in Mexican adults

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Rev Bras Ativ Fis Saude 26(suppl 3):49

**Background:** The "Active and Healthy Business Challenge" is a way to encourage organizations to carry out actions that promote physical activity among their employees to counteract the effects of sedentary lifestyle. **Aims:** Physically activate the collaborators of the organizations through a program that allows the promotion physical activity and healthy habits. **Methods:** The actions that organizations carry out and comply with the following indicators were evaluated: 1) healthy habits, communication, promotion of healthy lifestyles, talks and conferences, nutrition guidance, physical activation, healthy habits, healthy menus, include balanced menus in their dining rooms, 2) spaces and opportunities, physical activation apaces, areas to be physically activate their collaborators, exercise routines, exercise routines carried out by the collaborators in each of the work centers, agreements, collaboration agreements with sports centers, gyms, doctors or monitors, personnel responsible for the program, instructors and activators, personnel responsible for the area of physical activation, nutritionists, personnel responsible for nutritional orientation, 3) physical condition index, population measured, percentage of collaborators participating in the challenge, Body Mass Index (BMI), indicator that detects the state of overweight or obesity, waist circumference (WC), measurement to indicate the health risk in relation to overweight and obesity, measurement of the Physical Condition Index (PCI), determine the level of physical condition, 4) events, events of We Want Active Mexicans, 5 events that the objective is to generate the habit of physical activity, careers, walks, family rallies. Organization of massive physical activation events, sports, recreational tournaments. Tournament Organization. **Results:** In 2017: 12 organizations and 60,670 employees were evaluated, where 68% were sedentary, 28% were semi-active and 4% active. In 2018: 20 Organizations and 74843 employees were evaluated where 63% were sedentary, 32% semi-active and 5% active. In 2019: 22 organizations and 83, 771 employees were evaluated where 36% were sedentary, 63% were semi-active and 1% active. The analysis indicates an improvement in the PCI of the collaborators. **Conclusions:** It offers to improve the physical condition index and the health of the collaborators, to promote healthy environments, to have healthy collaborators that are a fundamental factor of competitiveness and are essential for the improvement of the productivity and sustainability of the Organization. **Relevance:** To evaluate the index of physical condition of the collaborators, to offer them programs in their work centers, personal monitoring by area and by organization, and to recognize the participants.

**Keywords:** Icf, BMI, WHR.

**Abstract code:** 82



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# BMI physical activity and handgrip strength in new students of the Bachelor of Nutrition

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Rev Bras Ativ Fis Saude 26(suppl 3):50

**Background:** Background: Increasing physical activity (PA) during preadolescence and adolescence is critical to reversing the obesity epidemic. Latina girls aged 11-17 have high levels of obesity and are less active than the general adolescent population. The Physical Activity Partnership for Girls (PG) is a community-academic research partnership addressing the needs of Latina adolescent girls (ages 11-14) in an urban, economically disadvantaged community in Texas. Using a community-based participatory approach, we obtained caregiver (Latino/a mothers, grandmothers, and fathers) input to understand priorities and needs for promoting PA among this population. **Aims:** Objectives: This study assessed Latino caregivers' perceptions about the neighborhood environment that either promotes or inhibits Latina girls' physical activity. **Methods:** Methods: Caregivers (16 females and 15 males) from an urban neighborhood in south-central Texas each participated in one of four focus groups. Bilingual moderators facilitated the groups in English and Spanish. We analyzed transcripts of the discussions and identified themes using the grounded theory approach. **Results:** Fathers expressed the "need to be more careful with girls" because of older men, boys playing aggressively, and sexual predators living in the neighborhood. In addition, they identified built environment issues such as insufficient locations for girls to play, high traffic areas, and stray dogs. Mothers/grandmothers expressed similar concerns as fathers, and talked more in depth of other concerns such as gangs, drug exchanges, and gun violence. These safety concerns made it difficult for caregivers to allow girls to be outside and engage in outdoor PA. **Conclusions:** Conclusions: Findings inform the development of community-based PA programs for Latino families. Such programs should provide information to caregivers and girls on available local PA resources and activities. **Relevance:** Relevance for physical activity and health research in Latin America or with Latin American populations: The lessons learned from this project inform our knowledge about how neighborhood environments influence PA behaviors in US-based Latina adolescents. More specifically, they inform how to develop community-based PA programs for US-based Latino families living in low-income urban areas where these built environmental barriers may exist.

**Keywords:** Neighborhood, Physical activity, Latino adolescents.

**Abstract code:** 27



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# Reliability and validity of the SIT-Q-7d questionnaire in Spanish for adults

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Rev Bras Ativ Fis Saude 26(suppl 3):51

**Background:** The number of older adults has increased in recent years due to the increase in life expectancy due to the health and development policies in society. Physical activity regulates physical and mental functions and decreases the effects of chronic diseases. **Aims:** To determine the nutritional status and level of physical activity in older adults in the province of Azuay, Ecuador. **Methods:** A cross-sectional study with a representative sample calculated with EPIDAT v3.1, from the province of Azuay, Ecuador. Anthropometric measurements to determine nutritional status and surveys were applied in participants' homes. The nutritional status was determined by the body mass index, physical activity was determined with the international questionnaire for physical activity (short IPAQ). **Results:** 400 older adults from the urban and rural areas of the province of Azuay participated with an average age of  $77.17 \pm 7.7$  years. 60.3% were women, 49.5% were married. 47% lived in urban areas and 53% in rural areas. 49.5% were overweight or obese. 29.25% had a low activity level or were inactive. In the urban area, 63% had a high or moderate level, while in the rural area, it was 77%. 49.25% were overweight or obese. The level of physical activity was similar in all older adults, regardless of nutritional status. **Conclusions:** Approximately 30% of older adults in the province of Azuay are inactive or have low levels of physical activity; this prevalence is higher in the urban than the rural area. There are no differences in the level of physical activity according to nutritional status. **Relevance:** Determining the nutritional status and level of physical activity in older adults, as a baseline for interventions in promoting healthy lifestyles, is essential since it is shown that active older adults have lower mortality and morbidity rates due to chronic diseases, strokes, some types of cancer. They also have better cardiorespiratory functioning and better body composition and muscle mass. In addition, it promotes functionality and decreases the risk of falls. All this translates into a better quality of life. These data will be granted to the Ministry of Health for planning population interventions.

**Keywords:** Food, Exercise, Public policies.

**Abstract code:** 16



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# Validity and reproducibility of long IPAQ and MTPAQ in a subsample of teachers

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**Background:** In 2011, the Pan American Health Organization (PAHO) placed Peru in eighth place in the world with obese children between 6 and 9 years old. In 2014, the Ministry of Health reported that 50% of Peruvians do not do physical activity. These health problems go against maintaining a healthy body and society. **Aims:** Determine to what extent the use of the bicycle influences the improvement of healthy lifestyle habits in secondary education students from the National College of Application UNHEVAL - Huánuco, 2018. **Methods:** The procedures of quantitative and qualitative data analysis and the presentation of data within the scientific writing framework, offer resources for the writing of scientific papers, present a descriptive scheme for the elaboration of research projects and suggest criteria for its evaluation and self-evaluation. **Results:** The above shows that the use of the bicycle improved the healthy lifestyle habits of the experimental group. It is also evident that students in the experimental group showed appropriate habits about image and body weight, quality of life, physical activity, sports habits and healthy eating. **Conclusions:** It was determined that the use of the bicycle positively influences the improvement of healthy lifestyle habits in secondary school students at the National College of Application UNHEVAL - Huánuco, 2018. Current Physical Education establishes that the physical activity and practice of an active and healthy lifestyle contribute to the integral formation of the human being and to the development of physical, cognitive and social skills that contribute to the development of people's potential and increase of people's possibilities. It is important to practice physical outdoor activities such as the use of the bicycle, as well as holding a good posture and good hygienic and nutritional habits; since they contribute to good health and quality of life, that is, to achieve a complete state of physical, mental and social wellbeing. **Relevance:** Recently in Peru and Latin America, physical and mental health has been neglected by residents, as they live a sedentary life. Hence the level of relevance where a healthy lifestyles are being promoted to improve the health of future citizens and professionals in Peru.

**Keywords:** Bicycle, Healthy Habits, Active Living.

**Abstract code:** 75



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# The online ACT24 computerized physical activity recall instrument s and potential for a Spanish language version

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Rev Bras Ativ Fis Saude 26(suppl 3):53

**Background:** Frenkel technique versus Fallproof technique in the syndrome of falls of the elderly over 65 to 75 years of the nursing home in the city of Puyo. Assessment of balance and gait in older adults who participate and not in a physical exercise program, January 2014. Effectiveness of balance training in the prevention of falls in the elderly belonging to the Golden Years group of Canton Ambato. **Aims:** To determine the effects of the Fallproof program on the balance of older adults of a Geriatric Foundation, period 2019. **Methods:** A study was conducted with a quantitative approach, type of descriptive study, with a longitudinal design of a prospective cohort. The population consisted of 38 institutionalized older adults in the Geriatric Foundation. Eleven older adults were selected who met the inclusion and exclusion criteria, aged 60 to 70 years. With the prior informed consent of the legal representative of the Foundation, sociodemographic characterization evaluation was carried out, then the pre-evaluation was applied, the exercise program was executed, and finally, the post-evaluation was carried out with balance assessment scales (TB, EAF), which allowed to determine the risk of falls in older adults. **Results:** In the evaluation of the balance with the EAF, the items that showed greater statistical significance after the application of the exercise were: stretch forward to catch an object at shoulder height, walk with tandem feet, monopodestation, a long jump of two feet—finding a statistically significant association between the application of the Fallproof program and changes in balance. **Conclusions:** Through the execution of the Fallproof program, comparative results were obtained before and after its application, where it was evident that an adequate implementation during the corresponding period and combined with an exercise program that is systematized and that includes The work of dual tasks improves the conditions of equilibrium in institutionalized older adults, thus reducing the number of falls, due to physiological adaptations acquired by the application of the program. **Relevance:** It was shown that adequate implementation of the Fallproof program during the corresponding period and combined with a systematized exercise program improved the equilibrium conditions in the population from the intrinsic adaptations achieved, thus decreasing the number of falls, generating in them greater facility for the development of their basic functional activities.

**Keywords:** Fallproof, Balance, Senior, Falls.

**Abstract code:** 25



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# Adaptation and reliability of the SOPLAY tool in scholars of a city of Ecuadorean Andes

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Rev Bras Ativ Fis Saude 26(suppl 3):54

**Background:** Given its low cost and convenience, one of the most commonly used methods for estimating total energy expenditure (TEE) among athletes are physical activity questionnaires; for promoting an adequate health status and sports performance. Nonetheless, the accuracy of the estimations derived from these instruments among athlete populations is unknown. **Aims:** To evaluate the predictive validity of questionnaires for estimating TEE in a small sample of elite Mexican athletes. **Methods:** A convenience sample of 12 Mexican elite athletes aged 15 to 29 years participated in the study. They belonged to national selection teams of handball, athletics, boxing and swimming. In total, 91.0% of participants were in the pre-competitions phase. TEE was measured using three evaluation methods: 1) indirect calorimetry at rest, 2) indirect calorimetry during cardiopulmonary stress test, and heart rate monitoring during free living for a week. TEE was estimated using the reported activities in the Laval questionnaire, the global physical activity questionnaire (GPAQ) and the Ainsworth method (i.e. metabolic equivalents). The correlation and concordance was estimated using Pearson and intra- class correlations. The predictive ability was evaluated with simple linear regression models. **Results:** The average TEE measured by indirect calorimetry and heart rate monitoring was of 3,400.27  $\pm$  688.3 kcal; meanwhile, this estimate was higher for the Laval questionnaire (6,805.27  $\pm$  1,735.72 kcal) and lower for the Ainsworth method (4,087.56  $\pm$  647.94 kcal). The difference between measured TEE and estimated TEE through questionnaires ranged between -765.46 y 3,731.06 kcal. No correlation or concordance was observed between measured and estimated TEE ( $p > 0.050$ ). The predictive validity of questionnaires ranged between 12.8% and 15.2%, being slightly higher for the Ainsworth method. The intercept differed significantly from the origin with the Laval questionnaire ( $\alpha = 2,416.50$ ,  $p = 0.023$ ) and the GPAQ ( $\alpha = 2,487.71$ ,  $p = 0.011$ ). **Conclusions:** Using these questionnaires is not recommended for estimating the TEE among elite Mexican athletes because they overestimate the TEE, they have a low predictive ability and do not have a correlation or concordance with the TEE measured by indirect calorimetry and heart rate monitoring. **Relevance:** We suggest developing a simple method for estimating TEE, with lower estimation error and higher predictive ability, among a representative sample of Mexican athletes.

**Keywords:** Questionnaires, Evaluation, Energy Expenditure, Athletes, Physical Activity.

**Abstract code:** 69



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# Comparison between Practice, Intensity and Preference of Physical Activity between Genders in three schools in Sabana Centro 2018-2019

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Rev Bras Ativ Fis Saude 26(suppl 3):55

**Background:** Some people who do little physical activity are unaware of the various risks involved in the minimum practice of exercise. But they also do not know the improvement of the effects on the importance of physical activity to have a better learning and development that impact students in all aspects, both physical, cognitive and mental, since motor and muscle development has a close relationship with academic performance, which is demonstrated by researchers at the Autonomous University of Madrid (Bonilla & Toro, 2017). **Aims:** To assess if first-grade children of a public elementary school who are undergoing a physical activity program have a better school performance. **Methods:** The population under study was 73 students from a primary school in the municipality of Querétaro. A quasi-experimental design of pre-test, post-test, and control group was carried out. A four-month intervention was developed, the experimental group was increased five hours a week of physical activity and the control group two hours a week. For the data collection, a questionnaire was constructed, which consists of 21 questions and obtained a reliability coefficient of Cronbach's Alpha of 0.796, in addition, the NSE survey, the motor coordination battery (KTK) and the instrument for measuring were applied academic performance (TERA). For the treatment of the data, the Chi-Square statistical technique and Student's T-test were used. **Results:** It was found that there is an association between physical activity and academic performance. In addition, an association was found between physical activity and global motor development; finally, no association was revealed between socioeconomic status, physical activity, and academic performance. **Conclusions:** Based on the results obtained, it is concluded that there is a highly significant association in which children perform daily physical activity and academic performance. **Relevance:** Generate physical activity programs in school populations for disease prevention, improvement of conditional and coordinative physical abilities, have an impact on promoting healthy lifestyles.

**Keywords:** Performance, Socio-economic level, Physical activity.

**Abstract code:** 64



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# Prevalence of risky health behaviors among college women in the City of Brasilia, Brazil

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Rev Bras Ativ Fis Saude 26(supl 3):56

**Background:** Depression is associated with high societal costs and greater debilitation relative to other chronic diseases (e.g., diabetes, arthritis). Foreign-born Latinas living in the U.S. often have poorer mental health outcomes than women in other racial/ethnic groups. Few prospective studies have examined impact of physical activity (PA) interventions on depressive symptoms in Latina populations. **Aims:** This study utilizes data from Enlace, a randomized controlled trial, to assess the impact of a PA intervention, session attendance, and time in PA on depressive symptoms among low-income, foreign-born Latina women. **Methods:** Eight community resource centers (CRCs) in four south Texas counties were recruited and randomly assigned to the 16-week Enlace PA intervention (4 CRCs) or an attention-control group (4 CRCs). 620 Latina women living in colonias on the U.S.-Mexico border were enrolled in Enlace (Mage = 40 years, 86% Mexican immigrant, 83% uninsured). Participants completed assessments for depressive symptoms (CES-D 10), demographics, and PA measures (CHAMPS and accelerometry) pre- and post-intervention. Stepwise regression evaluated: 1) effects of study condition, session attendance, moderate-to-vigorous physical activity (MVPA; accelerometry and CHAMPS), on depressive symptoms at 16-week follow-up, and 2) whether session attendance or MVPA (accelerometry) moderated the relationship between study condition and depressive symptoms. Analyses controlled for baseline age, BMI, and depressive symptoms. Fitted predictive value graphs examined if there was a dose-response relationship between session attendance or MVPA (accelerometry) and depressive symptoms. **Results:** Greater session attendance ( $p=.035$ ) and MVPA (accelerometry;  $p=.006$ ) was associated with fewer depressive symptoms at follow-up across both intervention and control groups. Study condition and CHAMPS MVPA were not associated with depressive symptoms at follow-up. Session attendance and MVPA (accelerometry) did not moderate the relationship between study condition and depressive symptoms at 16-weeks. Fitted predictive value graphs indicated a small dose effect for session attendance, but not MVPA (accelerometry). Participants who attended 10-12 sessions showed fewer depressive symptoms from pre- to post- intervention. **Conclusions:** Latinas who participated in Enlace, regardless of study condition, experienced a reduction in depressive symptoms at follow-up. Engagement in group-based education sessions, irrespective of session content, may support mental wellbeing among low-income Latina women. **Relevance:** Previous research is primarily cross-sectional and focuses on non-Latino, clinical populations. This study examines the impact of PA on depressive symptoms among low-income, foreign-born Latinas, utilizing data from a RCT. Findings underscore importance of engaging in group-based programs to alleviate depressive symptoms in this population.

**Keywords:** Physical activity, Latinas, Depressive symptoms, RCT.

**Abstract code:** 54



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# Physical activity sleep diet and screen time among adolescents in Mexico City

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Rev Bras Ativ Fis Saude 26(suppl 3):57

**Background:** Low levels of physical activity (PA) practice are associated with the development of Chronic Noncommunicable Diseases. **Aims:** To describe the PA promotion strategy developed by the Ministry of Health (MOH) of Brazil. **Methods:** Descriptive study with information from internal “Movement Brazil Strategy” documents from the MOH. **Results:** The MOH organizes the promotion of PA in Primary Health Care through the “Movement Brazil Strategy” (MBS), composed of actions that aim to expand the population's access and participation to PA in an intersectoral way. Currently, these actions include the Physical Activity Guidelines for the Brazilian Population, the Academia da Saúde Program (ASP) and PA actions within the scope of the Saúde na Escola Program (SEP). The Guidelines aim to prepare the first Brazilian recommendations for PA, divided by life cycles, and considering the domains and contexts of PA practice among Brazilians. The Guidelines are being prepared by the MOH and by specialists in the area, with the launch scheduled for the end of 2020. The ASP, created in 2011, aims to promote health and prevent risks and injuries, developing actions for the promotion of PA practice in spaces called hubs, which are public places with infrastructure, equipment and qualified professionals for delivering free lessons. It currently covers 54.2% of Brazilian municipalities. The SEP, created in 2007, promotes the integral development of students and provides the school community with participation in programs that articulate health and education, addressing the vulnerabilities of the territory where it is taking place, through the execution of health promotion actions centered around several themes, one of them being PA. Currently, the program is in 95% of the municipalities. **Conclusions:** Currently, the MOH is committed to evaluating and monitoring MBS actions, as well as developing others to enhance the population's access to opportunities for PA. **Relevance:** MBS actions are including the participation of several Brazilian Universities in its planning, development and evaluation process.

**Keywords:** Public Policy, Physical Activity, Primary Health Care.

**Abstract code:** 67



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# Sex differences in the association between sitting time and dietary patterns Mexico City Survey 2015

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Rev Bras Ativ Fis Saude 26(suppl 3):58

**Background:** Patients with chronic kidney disease (CKD) have a high prevalence of malnutrition and low aerobic capacity, which can be aggravated by a sedentary lifestyle. It has been observed that physical activity in these patients is beneficial for the prognosis of complications, improves cardiovascular risk factors, increases muscle mass, and, thus, reduces the risk of mortality. The phase angle has been proposed as a good indicator of nutritional status and mortality prognosis. **Aims:** To analyze the effects of intradialytic exercise on the total phase angle, segmental and lipid profile of patients on outpatient hemodialysis. **Methods:** A prospective open-label clinical trial was conducted at the National Institute of Pediatrics. Participants exercised with an exercise bike 30 minutes per session for two months. Evaluation of the lipid profile was made, and the phase angle was determined by multifrequency BIA with the InBody®S10; (Biospace, Seoul, South Korea), at 0, 4, and 8 weeks of exercise. **Results:** 12 participants were included ( $14.9 \pm 1.2$  years); the prevalence of short stature was 83.3%, of muscle mass below the average 75% and of low weight for age 33.3%. The total phase angle followed a tendency to increase ( $5.1 \pm 1.3$ ,  $5.2 \pm 1.2$ ,  $5.5 \pm 1.5$ ;  $p = 0.072$ ), and in the segmental analysis, it was observed that the phase angle of both legs had a significant increase (right:  $5.4 \pm 1.7$ ,  $6 \pm 1.7$ ,  $6.5 \pm 2$ ,  $p = 0.004$ ; left:  $5.3 \pm 1.6$ ,  $5.8 \pm 1.6$ ,  $6.3 \pm 1.9$ ,  $p = 0.001$ ). Serum triglycerides decreased ( $155 \pm 80$ ,  $108 \pm 51$ ,  $108 \pm 53$ ;  $p = 0.033$ ), as well as visceral fat area ( $23.8 \pm 13$ ,  $20.5 \pm 10$ ,  $18.3 \pm 12$ ;  $p = 0.026$ ). The Extracellular Water / Total Body Water index decreased ( $0.38 \pm 0.01$ ,  $0.38 \pm .01$ ,  $0.37 \pm .02$ ;  $p = 0.009$ ), suggesting better fluid control. **Conclusions:** The intradialytic exercise in the pediatric population with CKD in ambulatory hemodialysis is safe and has benefits in the lipid profile, being able to reduce the cardiovascular risk. The total phase angle was observed with a tendency to increase and that of both legs had a significant increase; that is, the body region that was exercised to a greater extent improved in terms of cell membrane integrity, cell size and body water distribution. **Relevance:** This study generated evidence regarding the benefit of physical activity in the pediatric age, even in pathological contexts. The evidence of improvement in clinical settings is important so that these practices can be generalized in programs and comprehensive treatments that include physical activity, that is implemented in different environments, with a healthy population, and with pathologies, in Latin America.

**Keywords:** Phase angle, Exercise, Intradialytic, Hemodialysis, Children.

**Abstract code:** 42



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# Relationship between indicators of Physical Activity and academic performance in schoolchildren from 49 countries, Ecological Study

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**Background:** Poor physical fitness and inadequate nutritional status are two risk factors for the development of cardiovascular diseases. This association is less studied among children despite this process starts during the early years. Socioeconomic status is one of the factors influencing physical fitness and nutritional status. In Chile, children from all low, medium and high socioeconomic status attend one of three types of schools: public, subsidized and private, respectively **Aims:** To compare the physical fitness and nutritional status among Chilean school-age children from public, subsidized and private schools **Methods:** A total of 1656 school age children from 1st to 8th grade from public, subsidized and private elementary school in Santiago, Chile were measured. Physical fitness was measured using the 6-minute walk test (6MWT), dynamometry and horizontal jump. Nutritional status was measured using the prevalence of overweight/obesity, body fat levels and waist circumference. Variables were classified in categories according to pre-established cut-points or tertiles. To establish relations the percentage of school age children in each category across school type and sex was analyzed using Chi-square tests **Results:** There is a higher proportion of children in the lowest tertile of dynamometry performance and a higher proportion of children with high waist circumference in public schools compared to subsidized or private schools. There is a higher proportion of girls in the lowest tertile of dynamometry performance and horizontal jump in public schools compared to subsidized and private schools. There is also a higher proportion of girls in the highest tertile of body fat, a higher proportion with overweight and obesity and high waist circumference in public schools. **Conclusions:** The school type is related with some physical fitness and nutritional status indicators. School aged children attending public schools have a worse physical fitness and nutritional status. This is observed specially among girls. **Relevance:** School-age children attending public schools, specially girls, are more vulnerable for the development of cardiovascular risk factors. Physical activity promotion strategies should focus their efforts in improving physical fitness and nutritional status in this particular group.

**Keywords:** Dynamometry, Obesity, Overweight, Fitness.

**Abstract code:** 62



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# Meanings around physical activity in school children, 8 to 12 years old

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Rev Bras Ativ Fis Saude 26(suppl 3):60

**Background:** Multiple features of the built environment are related to physical activity and health. For instance, geographic access to parks, transit stops, or bike lanes, facilitate opportunities for physical activity. However, the effect of spatial proximity to activity-promoting amenities on physical activity behaviors is complex. Research shows that those living in areas with higher park and trail access relative to other areas pay substantially more for housing. This implies that people pay a higher premium to live in neighborhoods with healthier built environments. The effect of the premium paid for living in neighborhoods with activity-promoting built environments is effectively a “tax” on income. And because health and income are causally linked, the overall effect of the built environment on physical activity and health is less clear. **Aims:** To examine the effect of the proportion of income spent on housing costs on physical activity and obesity, adjusting for activity-promoting neighborhood built environment characteristics. **Methods:** We used Waves II and III of the National Longitudinal Study of Adolescent to Adult Health (Add Health) 1996-2002 (representative sample of young adults from California, USA), to create models of obesity, gym attendance, and sufficient moderate-to-vigorous physical activity. We used logistic regression and stratified the analysis by income-quartile. We regressed those variables against number of all physical activity resources in the neighborhood, parks, fast food restaurants, and supermarkets, among other independent variables. We added a variable called “house poorness” to capture the monthly percentage of income spent on housing costs (i.e., rent or mortgage). We also created a variable to capture moving between waves II and III, and interacted the two variables. **Results:** Health and health behaviors (including gym attendance and sufficient physical activity) in the lowest two quartiles are affected by house poorness and its interaction with moving. House poorness and its interaction with moving had little effect on health or health behavior for those in the highest income quartiles. **Conclusions:** Although the built environment affects physical activity and health, capitalization imposes costs which may offset gains. Policy implications for promoting physical activity include a preference for income transfers over isolated built environment improvements in certain neighborhoods, and vouchers to offset housing costs. **Relevance:** We used data from California, a state with a high number of Latinos (most of Mexican origin or descent). The study examines a universal topic: do people pay more to live in areas with activity-promoting environments?

**Keywords:** Built environment, Capitalization, Economics.

**Abstract code:** 72



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# Socio-cultural influences on physical activity and sedentary behavior of school age children. Analysis of a case in the border

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Rev Bras Ativ Fis Saude 26(suppl 3):61

**Background:** The beneficial alliance between physical activity and health has been proven. Despite international efforts, physical inactivity in the world is alarming. Interventions that encourage more active lifestyles in the inactive population are required. **Aims:** To analyze the effects of a program that seeks to favor motivation and self-efficacy for physical activity in inactive adults. **Methods:** A moderate physical conditioning program with group psychological support was created, based on the postulates of the Theory of Self-Determination (TAD) and the Cognitive Social Theory (TSC). It is a pre-experimental study, with an experimental and control group, with an initial and final evaluation. The sample was incidental, not probabilistic, made up of 9 employees of a private University in Guadalajara, Jalisco enrolled in the program. The average age was 41 years (SD + - 1.09). The instruments were: International Physical Activity Questionnaire (IPAQ), Self-efficacy Scale for Physical Activity, and the Exercise Behavior Regulation Questionnaire (BREQ-3). Waist, fat percentage, flexibility and cardiovascular endurance measurements were included with the Rockport test. The analysis of results was performed with the statistical package SPSS version 25, with a comparative analysis between pre and post phases of both groups, using the non-parametric Wilcoxon test, with associated probability criteria of .05 or less and, an inter-analysis. Groups in both phases with the Kolmogorov-Smirnov test presenting the same conditions in the pre-phase. **Results:** There were significant differences in the pre and post phases of the experimental group in intrinsic motivation, integrated regulation and self-efficacy to perform programmed physical exercise. The control group did not present any significant difference in any of the components of self-efficacy or motivation. There were improvements in cardiovascular capacity, flexibility, waist circumference and fat percentage in more than 60% of the participants. **Conclusions:** The election of the TSC worked to mobilize personal and social determinants that increased from self-efficacy to attend the program while the ADT allowed implementing strategies that increased the two motivational components that are closest to self-determined behavior. **Relevance:** The study allowed knowing the most important determinants in inactive people. As well as recognizing the practical application of variables from behavioral change theories, which managed to increase cognitive-behavioral tools in program users, to perform physical activity in more self-determined stages.

**Keywords:** Inactive adults, Behavioral change, Self-determination, Self-efficacy, Behavioral change.

**Abstract code:** 40



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# Community initiative, with a gender focus, on Physical Activity in students of a Telesecundaria of the state of Puebla, Mexico

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Rev Bras Ativ Fis Saude 26(suppl 3):62

**Background:** Physical activity produces health benefits, including the prevention of cardiovascular and mental diseases. Intramural spaces, like gymnasiums, where people engage in these activities must meet the locative conditions that allow that physical activity achieves the expected benefits. Indoor air pollution is one of the most relevant environmental risks, because it exposes people to pollutants that may affect their health in an acute or chronic way. **Aims:** To establish the concentrations of particulate matter less than 10 microns (PM10), lead and chrome in a gymnasium located next to a vehicle roadway represented by mobile sources (public and private transportation) en Bogotá, Colombia. **Methods:** During a period of 20 consecutive days (excluding Saturday and Sunday), between 7 am to 9 pm (14 hours) PM10 measures were conducted using a personal sampling bomb GilAir-3 with PVC filters; the filters were analyzed for lead and chrome in the laboratory, using the inductively coupled plasma mass spectrometry (ICP-MS) technique. **Results:** PM10 concentrations per day registered ranged from 119 to 238  $\mu\text{g}/\text{m}^3$ , with a mean value of 188  $\mu\text{g}/\text{m}^3$  per day; lead interquartile values ranged from 0,001 to 0,003  $\mu\text{g}/\text{m}^3$  with a daily mean of 0,002  $\mu\text{g}/\text{m}^3$ , whereas chrome interquartile levels ranged from 0,31 to 0,58  $\text{ng}/\text{m}^3$  with a mean of 0,47  $\text{ng}/\text{m}^3$ . **Conclusions:** Daily concentrations of PM10, lead and chrome did not exceed the values established by the National Institute for Occupational Security and Health (NIOSH), for an 8 hour period (3000  $\mu\text{g}/\text{m}^3$ , 50  $\mu\text{g}/\text{m}^3$  and 500.000  $\text{ng}/\text{m}^3$ , respectively); however, except for lead, the World Health Organization criteria were exceeded (50  $\mu\text{g}/\text{m}^3$  daily and 25  $\mu\text{g}/\text{m}^3$  annually, 0,5  $\mu\text{g}/\text{m}^3$  annually y 0,25  $\text{ng}/\text{m}^3$  annually, respectively). **Relevance:** Results show that people engaging in sports activities in closed spaces, such as gymnasiums located close to vehicular roadways, are exposed to air pollutant concentrations that could reduce the benefits of physical activity. Therefore, places similar to the one studied here should be re- located or built in locations without the presence of mobile or fixed sources that could modify the air quality inside these buildings.

**Keywords:** Chrome, PM10, physical activity, exposure, environmental risks.

**Abstract code:** 60



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# Barriers and structural opportunities for quality physical education in primary and secondary schools in Mexico

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Rev Bras Ativ Fis Saude 26(suppl 3):63

**Background:** Studies that address the problem of excess weight and inactive behaviors such as television and video games in children and adolescents have focused on chronic noncommunicable diseases, with few studies about the effects of sedentary lifestyle on coordination capacities (balance, precision and movement capacity). **Aims:** The increase in the prevalence of sedentary lifestyles and the insufficient participation of physical activity in children has led to a reduction in their movement tasks. Therefore, it is important to detect early problems of motor skills development from early ages and even more in adolescence. The objective of the study is to detection of developmental coordination disorders of schoolchildren from a public school in Bogotá. **Methods:** This study was conducted on 63 schoolchildren (30 men and 33 women) with an average age of 16.24. The motor quotient was evaluated by the KTK test. **Results:** The punctuation of different tests shows that in dynamic equilibrium the sample had: 100,08 (+13,206), monopodal jump: 80,90 (+20,43), lateral jump test: 106,73 (+26,13) and lateral transposition test: 47,38 (+7,34). In general, in terms of motor coordination, the motor quotient showed the following qualifications: symptomatic 11.1% (n= 7), normal 58.7% (n= 37) and good 30.2% (n = 19). Statistically significant differences (p0,05) were found in the motor quotient between boys (37,048) and girls (34,374), with girls being mainly in the symptomatic category. According to Pearson's statistic test, we found no correlation between age and analyzed variables (p>0,05) but exists a statistically significant correlation between different motor abilities analyzed and gender (p0,05). It can be concluded that girls need to increase motor experiences to improve their coordinative abilities. **Conclusions:** The timely detection of limited motor skills allows evidence of another important effect of sedentary behaviors, which affects negatively the motor development of the adolescent. It must be a fundamental axis of the public health agenda of developing countries, for which integral programs should be generated from the school with a multidimensional approach, among them, the motor skills as development strategies, at an individual and collective level that allow a better motor, cognitive and social performance. **Relevance:** There is confirmation of the negative impact of sedentary lifestyle on children's coordination capacities and basic patterns of movement. Confirming the need for more experimental studies to confirm this.

**Keywords:** Sedentarism, Coordination, Physical activity, Schoolchildren.

**Abstract code:** 29



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# Barriers and facilitators of physical activity in young children living in poverty in Mexico

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Rev Bras Ativ Fis Saude 26(suppl 3):64

**Background:** Colombia has been characterized worldwide as a leader in the development and implementation of programs for the promotion of physical activity with community models that have proven to be cost benefits such as Active and Healthy Roads (Vías activas y saludables; VAS). Due to this, the importance to carry out an evaluation and monitoring of these programs to generate processes of political influence and continuous improvement with validated instruments. **Aims:** To evaluate the compliance of the indicators of the Quality and Healthy Road Seal of VAS Pereira. To implement the indicators of the Quality Bike Seal in the VAS Pereira Active and Healthy Road. To determine the level of compliance with the indicators of the Quality Bike seal and the criteria of good practices in the Pereira's Active and Healthy Road. Describe the results of the evaluation of the Pereira's Active and Healthy Roads. **Methods:** Deductive, a general evaluation model was applied in the VAS of Pereira. **Results:** 19 of 19 quality indicators were met, and a score of 7 was obtained in terms of good practice criteria. A new indicator is implemented, which is the calculation of the area (square meters), which is used to determine the amount of public space enabled for the promotion of physical activity. **Conclusions:** Pereira's VAS, through its offer of services, becomes an intangible asset of the city, which is part of its range of activities for use in leisure time. By performing a calculation of the time in annual average minutes per week, it was identified that the VAS of Pereira contributes an average of 265 minutes per week as an opportunity to perform physical activity, which contributes significantly to comply the WHO physical activity recommendations, which means that people who attend VAS have more minutes to have benefits in health, well-being and quality of life. **Relevance:** The VAS are programs recognized as a promising strategy according to the classification of the Useful Guide of Interventions for Physical Activity in Brazil and Latin America, contributing considerably to the adoption of healthy behaviors, increasing the social capital and the quality of life of the beneficiaries (Sarmiento et al, 2010). According to this, it is important to perform the VAS service evaluation, with procedures based on scientific evidence.

**Keywords:** Follow-up, Physical activity, Cost-benefit, Active roads.

**Abstract code:** 73



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# Psychological discomfort and physical activity in women

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Rev Bras Ativ Fis Saude 26(suppl 3):65

**Background:** Institutionalized children and adolescents develop outside a family nucleus, causing behavioral problems such as aggressive behaviors and deficiency in the development of psychosocial skills, evidenced by a significant number of abuses, physical and psychological violence, as well as rebellion inside and outside the home. These behaviors are associated with low academic performance and consequences in corporality, such as low self-esteem and rejection of physical contact. Despite the benefits that physical exercise brings in self-perception, there is no relationship between behavioral and corporality problems, being unexplored territory with the corresponding depth in institutionalized minors. An exercise program based on corporality is proposed for eight weeks at an institution in Valdivia, Chile. **Aims:** To describe the effect of an exercise program on the behavior and corporality of institutionalized children and adolescents. **Methods:** A qualitative study with a focus on grounded theory, approved by the Scientific Ethical Committee of the Valdivia Health Service. Homogeneous sample for convenience (6 children), excluding those in the adoptive process or family approach. Observation guidelines, semi-structured interviews, and in-depth sessions were used, corresponding to the participants' appreciation, added to that of caregivers and researchers. After the selection of the most repeated concepts through open coding and axial coding, two first central categories were obtained "physical and verbal aggression between them and with third parties" and "sedentary behavior" that were related to their respective subcategories, functioning as causal conditions, consequences and intervening conditions, added to the information coming from the context, physical activity is born as a strategy and new central category. The hypotheses are taken from the process of selective coding through the foundation of the emerging scheme, obtaining the understanding of the problem. **Results:** Positive behavioral aspects are described, reducing the appearance of negative behaviors and movement disorders. **Conclusions:** Physical activity based on corporality favors concentration, relieves tension, increases confidence, improves moods, self-esteem, self-image, and decreases the risk of anxiety. Also, PA reduces the frequency of negative behaviors such as physical and verbal aggression, disrespect, and problems with peers decreases. **Relevance:** The positive effects of physical activity should be evaluated and carried out in long-term interventions, granting the possibility of generating permanent changes in behavior and corporality.

**Keywords:** Behavior problem, Orphan child, Education, Physical training, Kinesiology.

**Abstract code:** 53



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# Exploring the Role of Social Support in Peruvian Women's Physical Activity Levels

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Rev Bras Ativ Fis Saude 26(suppl 3):66

**Background:** The International Labour Organization states that inadequate nutrition is the cause for losses up to 20% of companies' productivity, leading to the increase of chronic degenerative diseases, especially obesity; affecting staff performance, health care costs caused by static in the workplace. **Aims:** Analyze the nutritional status of office workers who work more than 8 hours/day/ week with sedentary behavior in gasoline service centers in the city of León, Guanajuato. **Methods:** Cross-sectional, analytical study. The sampling was total number of workers who are fixed to office work for more than 8 hours seated with informed consent of the company. (109 workers, both sexes between 18 and 60 years old). The instruments used were the OMRON HDF-514C Scale and 1.5 m measuring tape for anthropometric measurement of height, weight, BMI, skeletal muscle and visceral fat. A calibration was made with 10 people outside the company. A lifestyle evaluation survey and an international physical activity questionnaire (IPAQ short version for Mexican population) were used. The data was captured and analyzed in the Excel version 2018 program and in SPSS version 22.0 **Results:** Seventy-five percent were men and 24.57% women. The average age was 34.29. The average BMI was 27.43 Kg/m<sup>2</sup>, 73.5% of the population is above their normal weight. The percentage of normal visceral fat was 39.8% (n = 47), high (10 to 14) 31.35% (n = 37) and very high (> 15) was 29.0% (n = 34). The amount of skeletal muscle was evaluated by age group and gender, for men between 20 to 39 years old, the normal mean was 36.1%, and for men between 40 to 59 years old, 31.6% low. For women in the same age ranges they came out high (36 and 35) respectively. Fifty two percent did do perform any type of physical activity, which impacts on the ratio of sedentary work hours per day. The average hours were 5.15 hours. Sixty-seven percent of the population consumes alcoholic beverages in a social environment every week. **Conclusions:** Almost half of the analyzed population (43.25%) consume food outside home on a daily basis, only 10.16% make 5 meals per day. **Relevance:** It is important to monitor these occupational sedentary populations. Increasing skeletal muscles will increase your body's energy need. The more muscle you have, the more calories your body will burn. The increase in skeletal muscles can help prevent new weight gain.

**Keywords:** Nutritional, Sedentary, Office Workers.

**Abstract code:** 83



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# Inclusion with nature as a potential factor to promote physical activity and reduce sedentary behavior

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Rev Bras Ativ Fis Saude 26(suppl 3):67

**Background:** Cardiometabolic risk factors (CRF) are the basis for the onset of cardiovascular diseases, establish a source of social, occupational and family disability and contribute to the increase in overall mortality. This must be added a predisposition to sedentary behavior, so the positive emphasis has to be placed in the selection of the appropriate activity, The patient chooses according to his preference and possibilities because this is key to achieve success in the incorporation of the habit of regular long-term aerobic physical activity and decrease desertion (Arnaldo, 2012). The comprehensive approach to the prevention and management of cardiovascular diseases should include drugs and changes in the lifestyle of the patient. Physical activity is one of the cornerstones in the shift in lifestyle (Vázquez, 2015). "Recreovia de Bogotá" is a program that promotes physical activity in vulnerable people where 94 users attend each day. **Aims:** To characterize the importance of Musicalized Aerobic Gymnastics (MAG) as a motivating strategy for the prevention of CRFs. **Methods:** A cross-sectional mixed study was carried out, where the application of the informed consent was developed, the clinical history (CH) was taken into account, the PAR-Q, quality of life, IPAQ and FANTASTICO questionnaires were applied, in addition, interviews were conducted with the participating users at the "Recreovia Gran Estación" point. **Results:** The results found that MAG is a tool for cardiometabolic prevention and participate in MAG sessions by medical recommendation without the use of drugs. In the quantitative review, 100% of the respondents were women, 57.1% are pensioners, and 42.9 workers. The CH was taken to recognize the population with CRF, and it was found that 85.7% of respondents have 2 or 3 factors, 76.2% have high cholesterol. The FANTASTICO questionnaire resulted in an average of 96, giving a fantastic lifestyle to the group. **Conclusions:** Recreovia users who practice MAG make the Recreovia program change their healthy lifestyle habits and, in this way, CRF without the use of drugs. It is also evident that another benefit of GAM is the motivation for medical recommendations to reduce associated CRFs. Therefore, the Recreovia program is the best natural drug that prevents CRF and specific behavioral changes in the Bogotá population. **Relevance:** Reduction of cardiometabolic risk factors, costs of health services in Bogotá.

**Keywords:** Cardiometabolic risk factors, physical activity.

**Abstract code:** 7



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# Walkable environment and physical activity in neighborhoods of low/médium and high socioeconomic status in Chile

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Rev Bras Ativ Fis Saude 26(suppl 3):68

**Background:** In Colombia, the Departamento Administrativo Nacional de Estadísticas (DANE-2019) shows that in 2020 there will be around 6,500,000 people over the age of fifty, representing a population growth of 39.2%, being Bogotá the city with the most considerable increase, in search of promoting the health of the inhabitants of Bogotá. Recreovía is a program that helps healthy lifestyles with the practice of musicalized physical activity in vulnerable communities in Bogotá (IDRD - 2019). **Aims:** To analyze the variables of physical condition with Cardiometabolic Risk. **Methods:** Descriptive cross-sectional study; 221 women of  $56.71 \pm 10.79$  years old participated. The quality of life (CV) was evaluated with the WHOQOL-BREF questionnaire with physical and mental health, social relations, and environmental variables. The physical condition was evaluated from the hip-waist ratio (HWR) following the guidelines of the International Society for the Advancement of Cine-tropometry (ISAK); Prehensile strength was evaluated with the Takei 5001 analog dynamometer following the protocol of the American Society of Hand Therapists (ASHT). The jumping power was evaluated with the OptoGait platform through the Squat Jump (SJ) and the countermove jump (CMJ). The VO<sub>2</sub>max was evaluated with the 3-minute step test. **Results:** The statistical analysis was performed with SPSS through central tendency measures. The results show a high prevalence of positive perceptions of quality of life (QL), physical health: 88.7%, psychological health: 86.4%, environment: 67.9%, and social relationships: 61.5%. The physical condition was higher in the QL ( $p = 0.034$ ); there were differences with the QL ( $p = 0.003$  and  $p = 0.005$ ). The explosive force was greater in those who perceived that their QL was high. The jump power SJ ( $p = 0.034$ ) and CMJ ( $p = 0.029$ ) was significant. Although, to a lesser extent, differences were also found between the prehensile force and the abdominal perimeter ( $p = 0.05$ ). Low jump power was observed SJ ( $p < 0.001$ ) and in CMJ ( $p = 0.007$ ) in people with cardiometabolic risk. **Conclusions:** The population evaluated has a high perception of their quality of life, in addition to being positively associated with the ability to jump, RCC, with low cardiometabolic risk. There is no evidence of a direct relationship between grip strength and cardiometabolic risk if it is not associated with jump power and HWR. **Relevance:** The quality of life and physical condition in the elderly are reduced by the presence of NCD. Recreovia as a strategy reduces possible cardiometabolic risks.

**Keywords:** Latin America, Promotion of physical activity, Adults.

**Abstract code:** 8



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# Active travel among Brazilian school-age children and its associated factors

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Rev Bras Ativ Fis Saude 26(suppl 3):69

**Background:** Venkatraman, Leddy & Pendergast conducted a study to determine the clinical implications of fat intake in the immunologic status of cyclists, soldiers and runners, defining that many athletes consume approximately 25% fewer calories than estimated energy expenditure. Spirito, Garat and Bazán determined the differences between energy intake, energy expenditure and adequacy of a group club of grass hockey players. By categorizing the adequacy, they observed a higher proportion in the inadequate category, who did not meet the estimated energy expenditure. **Aims:** To describe the sociodemographic characteristics, classify body composition, establish the energy intake and estimate energy expenditure. **Methods:** The sample consisted on 81 athletes. We used a demographic survey and energy intake estimated through a 24 hour dietary recall. Anthropometric evaluation was done using the Heath and Carter method and energy expenditure was determined by calculating the basal metabolic rate through the WHO/FAO factorial method. Total energy expenditure was estimated by adding the basal metabolic rate, the activity factor according to the physical activity level, and the energy expenditure during training. Adequacy was considered as adequate when between 90 and 100%, inadequate by deficit, when below 90% and inadequate by excess, when above 110%. We calculated central tendency estimates, frequencies and contingency tables. **Results:** Of the studied athletes, 49.4% were males and 50.6% were females, 37.1% had acceptable body fat, and the predominant somatotype was the mesomorph with 51.9%, which indicates a higher development of muscle mass. The adequacy between caloric intake and energy expenditure was of 88.9% inadequate by deficit. **Conclusions:** Body composition was mostly mesomorph and with an acceptable percentage of body fat, the consumption of carbohydrates and proteins in grams was inadequate by deficit according to their requirements, the adequacy between caloric intake and energy expenditure was inadequate by deficit. **Relevance:** For Nicaragua, from the public health point of view this was the first research conducted in the fields of nutrition and physical activity, as a baseline for future research in the importance of eating correctly and training adequately in order to improve sports performance.

**Keywords:** Caloric Intake, Energy Expenditure, Combat Sports, Somatotype.

**Abstract code:** 66



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# Changes in health parameters produced by using the bicycle as transportation in a university community

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Rev Bras Ativ Fis Saude 26(suppl 3):70

**Background:** Performing physical activity is one of the most important recommendations for the promotion of health in the elderly population. **Aims:** Clarify whether the experiences of physical activity in previous periods of life and sociodemographic factors affect the current lifestyle, physically active or inactive, of people over 60, residing in Brazil and Spain. **Methods:** Exploratory research, carried out with elderly residents in the cities of Betim, Minas Gerais in Brazil, and in Bilbao, Basque Country in Spain. The choice of research sites and the sample was intentional, based on the data saturation technique to determine the total number of people. In-depth semi-structured interview was chosen. For the interpretation of the data, content analysis was performed. **Results:** Thirty-seven people over 60 years old participated, 19 in Brazil (11 physically active and 8 inactive people, with a mean age of  $63.1 \pm 2.42$  years; 8 men and 11 women); 18, in Spain (10, physically active and 8, inactive, with a mean age of  $70.5 \pm 5.1$  years; 8 men and 10 women). In both countries and for both groups, physically active and inactive elderly people, was found that, during childhood, adolescence and early adulthood, most did not have opportunities to practice organized physical activities because they were occupied with their studies or work (domestic or in the field). Until adolescence, the leisure experiences of both groups were limited to traditional street games. During adulthood, physically active people, especially women, began to practice physical activity when their children are more independent or in later stages when they retire. On the other hand, the physically inactive people, affirm that they did not adhere to the practice of physical activity because they were not used to it, had not developed the habit throughout life; hence, they had no interest in doing so today. **Conclusions:** Previous experiences and gender influence the current lifestyle of elderly people. **Relevance:** It is important to promote gender equality and experiences of physical activity throughout life so that new generations of older people can be physically active.

**Keywords:** Lifestyle, Experiences, Barriers.

**Abstract code:** 76



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# Improving Mexican Women's Health and Addressing Complex Health Problems through Cycling and Active Transport Strategies

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Rev Bras Ativ Fis Saude 26(suppl 3):71

**Background:** Inclusion with nature has been related to health and well-being. Despite being a megadiverse continent, there are no studies in Latin America that have evaluated the relationship between physical activity (PA) and sedentary behavior (SB) with inclusion with nature. **Aims:** To evaluate the association between AF and CS with inclusion with nature in Ecuadorian school children. **Methods:** A cross-sectional study was conducted in schoolchildren aged 9 to 12 who attended 20 schools in Cuenca-Ecuador between October 2018 and March 2019. The levels of PA (IPAQ-C), the SB (excluding activities in school hours, iHealt), life satisfaction (5-25 scale), inclusion with nature (1-7 scale), weight, height, age, sex and type of school (public/private). The relationship between inclusion with nature with PA (dichotomized by its median) and the SB was evaluated by means of logistic and linear regression models adjusted for age, sex, type of school, life satisfaction and Z scores of the index of body mass (BMI). **Results:** 1,028 children participated (52% were women, 51% attended public schools and 35% were overweight or obese) with a mean age of  $10.4 \pm 1.2$  years. The children obtained a moderate AF score ( $2.7 \pm 0.5$ ) and spent an average of  $293 \pm 158$  min/day on sedentary activities, of which  $212 \pm 139$  min/day included screen activities. The level of satisfaction with life and inclusion with the nature of the Cuenca students was  $18.6 \pm 4.5$  and  $4.4 \pm 1.8$ , respectively. Both PA and SB were strongly associated with inclusion with nature. For each unit of increase in the inclusion scale with nature, the screen time decreases by 6.7 minutes (95% CI: -11.62 - 1.79 p <0.01) and the probability of performing higher levels of AF increases by 26% (OR: 1.26; C95%: 1.15 - 1.38; p <0.001). **Conclusions:** The results suggest that the connection with nature plays an important and independent role at the level of PA and SB. **Relevance:** This is the first study on the subject in schoolchildren residing in Latin America; It can serve as a basis for prospective studies and design strategies that promote connection with nature with multiple benefits for both children's health and the environment.

**Keywords:** Physical activity, Sedentary, Nature, Children, Ecuador.

**Abstract code:** 20



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# “Ruta Leones” Cycling Roads to promote Physical Activity at the University of Guadalajara and the State of Jalisco, Mexico

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Rev Bras Ativ Fis Saude 26(suppl 3):72

**Background:** In the Central American region, low self-esteem is a phenomenon little studied at school level, despite its importance. In most countries interventions are not prioritized to meet the demand for this latent problem in the general population, and much less in childhood (Pereira et al., 2011). In addition to this, it is often unknown that the practice of physical activity can play a leading role in the prevention of such mental health problems in this population (Franco, Coterón and Gómez, 2017). **Aims:** The purpose was to examine the relationship between the physical activity habits of Central American children, their level of self-esteem and the relationship between age and country of origin. **Methods:** This was a correlational study of random probabilistic samples by clusters, which evaluated 5291 students enrolled in fourth, fifth and sixth grade, of which 52.3% were girls and 47.7% boys, belonging to 74 schools in Guatemala, Honduras, El Salvador, Costa Rica, Nicaragua and Panama, with an average age of  $10.90 \pm 1.13$ . In all countries, the LAWSEQ questionnaire was used to measure the level of self-esteem and the physical activity questionnaire for boys and girls (PAQ-C) was applied. **Results:** The results of this research showed that 47% of the participants reported low levels of physical activity; regarding self-esteem, children from 9 to 10 years had lower percentages with 51.6% and 47.7%, respectively. In relation to the country of origin, Costa Rica and Guatemala have a better level of self-esteem than children living in El Salvador, Nicaragua, Honduras and Panama. In addition, it was determined that the age, level of physical activity and country of origin predicted 58% of the level of self-esteem of Central American children. **Conclusions:** Given the findings of this study, it can be affirmed that this research provides new evidence about mental health in the Central American child population, by exploring the relationship of self-esteem with aspects such as age, level of physical activity and place of origin. In summary, self-esteem is a basic element in the personal training of children. **Relevance:** It provides a diagnosis that will guide future interventions in physical activity and peace environments, in an extremely violent region.

**Keywords:** Central America, Physical Activity, Prediction, Self-esteem.

**Abstract code:** 80



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# Analysis of the service in Pereira's active and healthy roads

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Rev Bras Ativ Fis Saude 26(supl 3):73

**Background:** Insufficient sleep is common in children in Chile; however, there is little information measured objectively since studies are mostly based on the perception of sleep. On the other hand, low levels of strength, determined by handgrip, are a marker of poor health. **Aims:** The objective of this work is to determine the association between manual grip strength and sleep hours in Chilean children of 8 years. A cross-sectional study was conducted that included 185 subjects. **Methods:** The grip strength was determined by dynamometry (Takei 5401); sleep hours through accelerometers (Geneactiv, original model). The association between variables was calculated by simple linear regression. **Results:** The results indicate that on average the children evaluated sleep 9.1 hours per day and exert 16.1 kg of manual grip strength, both variables were positively associated ( $p = 0.000$ ). **Conclusions:** It is concluded that in the subjects evaluated, grip strength values are associated with sleep hours. **Relevance:** The information presented is relevant since it provides evidence about a population that has been poorly studied in Latin America, in addition to the results found about the association between grip strength and sleep hours, it can be useful for planning interventions physical activity that aims to improve the health of children.

**Keywords:** Accelerometry, Dinamometry, Children.

**Abstract code:** 41



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# Open streets in Latin-America Health impacts related to physical activity

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**Background:** The Global Matrix on Physical Activity of Children and Youth is a global initiative that brings together physical activity (PA) researchers and experts from around the world to develop national Report Cards on PA of children and youth. This initiative, led by the Active Healthy Kids Global Alliance, aims to compare common PA indicators informed by the best evidence available for each country, following a harmonized methodology. This initiative has been operational since 2014. To date, there have been 3 Global Matrices produced. Despite the scarce evidence on PA among Latin American children and youth, the number of Latin American countries involved in the Global Matrix project has increased progressively since the first version. **Aims:** The aims of this analysis are to describe the participation of Latin American countries in the Global Matrix initiative over time and to highlight the main outcomes and lessons learned from their involvement in the Global Matrix initiative. **Methods:** The present analysis is based on data from Global Matrices 1.0, 2.0 and 3.0, and on periodic surveys conducted by the AHKGA among the country leaders. A descriptive analysis and a qualitative analysis of the surveys were conducted. **Results:** Since 2014, 14 Report Cards on Physical Activity of Children and Youth have been developed by Latin American countries. The participation of Latin American countries has increased from 2 to 7 countries between 2014 and 2018. In the most recent version of the Global Matrix, Latin American countries represented 14% of the participating countries and involved 35 different institutions, including academic institutions, government institutions, and nongovernmental organizations. Researchers and leaders from the Latin American countries have participated in 38 publications and have been involved in 27 presentations including posters and oral presentations. The main benefits from the involvement in Global Matrix reported were an increase in awareness of the relevance of PA promotion, capacity building for research in PA, a few policy changes, and improvements in surveillance systems. Overall, Latin American countries had the lowest average grades in the Global Matrix 3.0. **Conclusions:** The Global Matrix represents a promising opportunity to advocate for PA, to build local capacity and to improve PA policies and research for a region that has been historically under-represented in the global surveillance of PA. **Relevance:** This project provides evidence of the physical inactivity crisis among Latin American children compared to other global regions and has identified research gaps and capacity building opportunities in the region.

**Keywords:** Children, Advocacy, Report cards, Physical activity.

**Abstract code:** 79



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# Advantages and limitations of using the FitBit Flex®2 device to promote physical activity in the Mexican university population

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Rev Bras Ativ Fis Saude 26(suppl 3):75

**Background:** Physical activity (PA) is important for preventing and controlling several chronic conditions. In the Unified Health System of Brazil (SUS), PA is understood not only from a biological approach. The premise of this abstract is that PA does not refer only to energy expenditure above resting levels, but it is a complex and multicausal behavioral phenomenon. **Aims:** To briefly present the presence of PA and its promotion within the SUS, highlighting its potential for the control of chronic conditions. **Methods:** Exploratory search of the Brazilian Ministry of Health (MOH) website and related news articles and information available until December 2019. **Results:** A new PA program in SUS is being formulated with the objective of increasing the prevalence of PA in the Brazilian population. **Conclusions:** The importance of PA for health is well-recognized through the SUS, as exemplified with the case of cancer control, a chronic condition that represents a public health problem of great relevance and magnitude in Brazil. The SUS highlights that aerobic PA is an important protective factor, with strong evidence, among others, for breast, colon, stomach, main types of cancer in men and women in Brazil according to incidence estimates. The MOH has announced the launch of "Movement Brazil", a strategy using a Smartphone app which will allow the offer of different types of PA promotion strategies to the population. Recognizing the importance of PA for health in general, whilst acknowledging that it is not a panacea for any and all health conditions, policies such as Movement Brazil, which are well-coordinated with existing programs such as the Academia da Saúde, will be necessary. In spite of the abundant evidence that links PA with health outcomes, there will be other elements that will determine its enjoyment and overall benefits for individuals and society. **Relevance:** Monitoring the implementation of Movement Brazil will result in new evaluation tools for public health policies, and in subsequent outcomes for controlling chronic diseases.

**Keywords:** Chronic disease, Government Programs, Management of health conditions.

**Abstract code:** 81



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# Evaluation of conditional physical abilities during the program of sports intervention in university students of Nutrition

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**Background:** Sedentary behaviors, such as sitting time, may comprise the health of populations by replacing time to spent in physical activity and also is associated with poor dietary behaviors, such as snacking. This may contribute to having an unhealthy dietary pattern, and this association may differ between men and women. **Aims:** To evaluate the association of sitting time with dietary patterns and if this association is different between adult men and women living in Mexico City. **Methods:** We used data from a city-wide representative survey conducted between May and June 2015 in Mexico City. Self-reported information on minutes/day of sitting time was collected using the short version of the International Physical Activity Questionnaire short version (IPAQ). Dietary information was collected using a food-frequency questionnaire and patterns were constructed by cluster analysis. The association between tertiles sitting minutes/day and dietary patterns was assessed with multivariable multinomial logistic models. Interactions terms of sitting time and sex were tested. **Results:** Prudent, fast food and basic dietary patterns were identified, with higher consumption of fast food pattern and lower of prudent (38.4% vs. 26.0%). Fast food and basic patterns had a higher contribution to the total energy of high energy-dense foods (i.e., sweetened cereals, maize-based food, maize-tortillas, legumes). The prudent pattern was characterized by the highest contribution of healthy foods (i.e., unsweetened dairy, oilseeds, vegetables). Although no association was observed with the whole sample, men and women in the highest tertile of sitting time had lower (RRR=0.17) and higher (RRR=5.87) relative probability of having a basic pattern rather than prudent pattern, respectively. **Conclusions:** Sedentary behaviors, such as sitting time, differentially contribute to having unhealthy dietary patterns in men and women living in urban contexts, such as Mexico City. **Relevance:** No previous work on these associations in the Mexican population. Both, sedentary behaviors and unhealthy diets are probably contributing to the epidemic of obesity and chronic diseases in Latin American cities such as Mexico City.

**Keywords:** Sitting time, Dietary patterns, Sex.

**Abstract code:** 78



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# Implementation of a dance program on physical and anthropometric conditions in young people with Down Syndrome from Cuenca, Ecuador

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Rev Bras Ativ Fis Saude 26(supl 3):77

**Background:** The incidence and prevalence of chronic noncommunicable diseases (NCDs) such as diabetes, high blood pressure, among others, are presenting an exponential increase, affecting the health condition of the population. Globally, according to the WHO, non-communicable chronic diseases generate deaths of people equivalent to 41 million people each year, with cardiovascular diseases being the highest incidence with 17.9 million people each year, 80% of those responsible for the deaths premature, caused by factors such as smoking, sedentary lifestyle, alcoholism and poor diet. **Aims:** To correlate the isokinetic strength of lower limbs and grip strength with indicators of cardio-metabolic risk in sedentary and active adult population between 30-50 years of age in Bogotá. **Methods:** For the present study of non-experimental design, quantitative approach and correlational scope, probabilistic sampling was carried out, simple randomization, application of inclusion and exclusion criteria, classification of sedentary and active by means of the International Physical Activity Questionnaire (IPAQ), until constituting homogeneous intervention groups, typical of experimental studies. The final sample was 100 individuals (50 sedentary and 50 physically active). With the authorization of the institutional ethics committee and prior signature of informed consent, the clinical evaluation (body composition, blood clinic, grip strength and isokinetic strength of lower limbs) was performed. **Results:** Two research groups were standardized, where active and sedentary people were selected taking into account the IPAQ tool, obtaining 50 active people and 50 sedentary people. Regarding the correlation of variables, the independent variables that are the prehensile force and the isokinetic force of the lower limbs were taken into account compared to the morphological variables in the active population, where moderate indirect correlations of the prehensile force and the isokinetic force of the limbs lower with the fatty percentage (ICC = -0.525 to -0.593) ( $p < 0.01$ ), very high direct correlation with kilograms of muscle mass (ICC = 0.829 to 0.909) ( $p < 0.01$ ) and moderate direct correlation with the abdominal perimeter (ICC = 0.454 to 0.541) ( $p < 0.01$ ). In relation to the levels of prehensile strength and isokinetic strength of lower limbs compared to morphological variables in sedentary population, it was evident that moderate-low indirect correlations of prehensile strength and isokinetic strength of lower limbs with fat percentage (ICC = -0.310 to -0.526) ( $p < 0.01$ ), high-very high direct correlation with kilograms of muscle mass (ICC = 0.750 to 0.811) ( $p < 0.01$ ), Moderate direct correlation of visceral fat (ICC = 0.461 to 0.636) ( $p < 0.01$ ) and low-moderate direct correlation with the abdominal perimeter. Subsequently, the relationship of muscle strength with functional metabolic variables in the active population was evaluated by identifying very low-low inverse correlations with cholesterol (ICC = -0.074 to -0.200) ( $p > 0.05$ ), low inverse correlation with triglycerides (ICC = -0.219 to -0.303) ( $p > 0.05$ ), low-moderate direct correlation with systolic blood pressure (ICC = 0.386 to 0.493) ( $p < 0.01$ ) and very low-low direct correlation with blood pressure systolic. Finally, the correlation of muscular strength against metabolic functional variables in a sedentary population, it was possible to show a very low-low direct correlation with cholesterol, low-moderate inverse correlation with triglycerides (ICC = 0.268 to 0.425) ( $p < 0.05$ ), low direct correlation with systolic blood pressure and low direct and indirect correlation with diastolic blood pressure. **Conclusions:** In view of the study, we can conclude that muscle strength levels have a close relationship with body composition variables such as body fat percentage, BMI, kilograms of muscle mass, blood pressure, triglycerides, and total cholesterol, being relevant variables in the standardization of objective measurement techniques that recognize patients with metabolic disorders. **Relevance:** The standardization of identification models of cardiometabolic risk markers from muscle strength becomes an early detection tool when predisposing chronic noncommunicable diseases.

**Keywords:** Cardiometabolic, grip strength, Isokinetic force.

**Abstract code:** 18



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# “Inicio Mis Clases Activamente” process and outcomes of a physically active lesson program

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**Background:** Alpha-Fitness Battery: Field test for the evaluation of health-related physical condition in children and adolescents. Design and validation of two scales to measure the attitude towards food and physical activity during adolescence. **Aims:** To design an instrument and determine its validity of content to assess physical abilities in adolescents. **Methods:** Procedure - In the first instance, a bibliographic review was carried out in different databases using keywords. The information collected allowed us to determine the physical capacities that should be evaluated in Colombian adolescents according to their physical and sociodemographic characteristics; Once established, the search for tests that were useful to evaluate each of the capacities began. Subsequently, surveys were conducted on professionals in the area of sports and AF to determine the tests and percentages that, based on their experience, they considered relevant to add to the project. For the validation of the content of the instruments, two experts in the sports field were requested to approve the battery. **Results:** Description of the instrument - The instrument was divided into two parts. The first one must fill out sociodemographic data in addition to weight, height, BMI, and fat percentage based on the size of the folds. The second part corresponds to the evaluation of each physical capacity, which is divided into percentages according to importance. The force evaluation corresponds to 50% of the instrument, which is divided into explosive force (9%), resistance force in upper limbs (14%), in the trunk (14%), and in lower limbs (13%). In the assessment of aerobic capacity, the yo-yo test will be carried out with a percentage of 17% of the instrument; flexibility occupies 12%; The tests of Ely, Thomas, Ober, drawers, and yawns will be given 1% paca given one, obtaining as a total percentage 17% in the flexibility assessment. Finally, speed, agility, and coordination represent 16% and will be evaluated by the 4x10 meter test, for a total of 100% of the instrument. **Conclusions:** This research highlights the importance of the evaluation of each of the physical abilities of school adolescents in Colombia. **Relevance:** So far, no own instruments have been found in Colombia that assess the physical abilities of school-aged adolescents, so once again the idea that this research is important and of great benefit for professionals in this field is highlighted.

**Keywords:** adolescent, battery, physical ability, school education.

**Abstract code:** 19



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# Effects of a fitness program on inactive adults focused on increasing motivation and self-efficacy

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Rev Bras Ativ Fis Saude 26(suppl 3):79

**Background:** Providing public access to exercise and play is vital for health promotion across populations. **Aims:** We evaluated use and satisfaction of Trojan Park, a multigenerational playground with multiple activity areas and fitness zones in the city of Wellston in St. Louis County, MO. Many Latin American countries, such as Chile, Brazil, Uruguay and Colombia have also started implementing fitness zones. **Methods:** We used video footage and the System for Observing Play and Recreation in Communities (SOPARC), which is a valid and reliable system for collecting data on physical activity in parks. SOPARC has already been adapted and used in other Latin American countries, such as Brazil, Uruguay and Colombia. We then performed intercept interviews to gather user information and overall satisfaction with the park. **Results:** The park received a variety of attendees across age groups with children and middle-aged adults representing 41.1% and 50.3% of total park goers, respectively. From the survey, 92.0% respondents were black, 5.7% Latino, and 3.4% white. During the time observed, 47% of attendees were engaged in moderate to vigorous physical activity (MVPA), 22% were engaged in mild activity, and 30% were sedentary. We also observed participants spending the most time on the basketball court (38%), playground (28%), and picnic (17%) areas. Park goers traveled a wide range of distances to access the park and the overwhelming majority reported high satisfaction. **Conclusions:** Our findings demonstrate that multigenerational playgrounds with access to various activities and fitness zones may provide social and physical health benefits. Promoting physical activity is necessary for both developed and developing countries as physical inactivity and obesity continue to increase globally. **Relevance:** Fitness zones may be an effective public health intervention to promote physical activity as it is a cost-effective resource that provides free physical activity to the general public. Latin American countries also have an increased burden of obesity and physical activity and there is a gender disparity as men are found to be more active than women according to the current research. Fitness zones may effectively promote physical activity to the general public while also reducing the gender inequality by providing free exercise equipment in a safe and child friendly environment. This study further supports the need for public health research and interventions that can effectively promote physical activity using fitness zones.

**Keywords:** Fitness zones, Park use, Soparc.

**Abstract code:** 21



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# Effect of physical exercise as a nursing intervention in older adults with fragility attending a gerontological center

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**Background:** The level of physical activity generates adaptations for people's health. The objective measurement of physical activity is increasingly available to Latin American countries. Therefore, it is important to know the relationships with other factors that are also part of the health of Latino people, as has been done in other latitudes. **Aims:** To determine the relationship between the percentage of sedentary time and low, moderate and vigorous physical activity with fasting glucose metabolic variables and lipid profile in Costa Rican adult women. **Methods:** Forty-three women of legal age were recruited through the social action project ED-3367 Physical Activity for the Prevention of Chronic Noncommunicable Diseases of the Atlantic Headquarters of the University of Costa Rica. Each participant was taken a height and body weight, a fasting blood sample, and an ActiGraph wGT3X-BT accelerometer was placed on the wrist of the dominant hand for 6 -11 days. **Results:** Thirty-one women (age =  $43.64 \pm 11.18$  years, weight =  $74.96 \pm 16.54$  kg) participated in the study. There was no significant correlation between reported physical activity levels and metabolic variables ( $p > 0.05$ ). A  $42.73 \pm 9.56\%$  of the time reported was sedentary, a  $34.79 \pm 5.90\%$  low physical activity, a  $22.48 \pm 7.44\%$  moderate physical activity and 0% vigorous physical activity. Metabolic variables reported a fasting glucose =  $99.38 \pm 10.52$  mg/dL, total cholesterol =  $201.45 \pm 45.90$  mg/dL, triglycerides =  $165.22 \pm 118.64$  mg/dL, HDL-c =  $45.22 \pm 12.90$  mg/dL and LDL-c =  $122.03 \pm 36.35$  mg/dL. **Conclusions:** The level of physical activity is not related to fasting glucose or blood lipids levels in women. **Relevance:** This study is relevant in Latin America because it is based on the use of objective instruments to measure physical activity and its relationship with biological mechanisms.

**Keywords:** Accelerometry, Lipid Profile, Fasting Glucose, Women.

**Abstract code:** 23



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# Physical activity promotion and public policies for combating inequalities

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**Background:** The built environment is described as an important structural component in the promotion of physical activity in the population, therefore, a walkable environment can influence the level of physical activity of the population. **Aims:** To determine the correlation between the perception of the environment and the level of physical activity in neighborhoods of low, medium, and high socioeconomic levels (NSE) of Santiago de Chile. **Methods:** A subsample of the environmental and physical activity study carried out in 2014 (n = 1231) was followed up four years later. Measuring instruments were used following the model of IPEN-Latin America studies. NEWS-A was used to measure the walking environment and GPAQ (transfer and leisure-time domain) for physical activity. This sample is analyzed as a cross-sectional study. **Results:** 296 people from three neighborhoods in Santiago de Chile, high-NSE (n = 66), medium-NSE (n = 100) and low-NSE (n = 130) participated. The average age was 48 years $\pm$ 14, 60% were women and the average BMI was 27 $\pm$ 4.3 kg / m<sup>2</sup>. The NEWS-A score was P 50 = 273 RIQ = 240-345, according to neighborhood NEWS-A P 50 = 248 (low- NSE), P 50 = 275 (medium-NSE) and P 50 = 296 (high-NSE), statistically significant differences (p <0.01). The physical activity in the transfer domain was P 50 = 100 RIQ = 0-300 minutes / week and in the free-time domain it was P 50 = 0 RIQ = 0-180 minutes / week. According to neighborhood, the time in minutes / week in the transfer domain was P 50 = 100 (low-NSE), P 50 = 90 (medium-NSE) P 50 = 105 (high-NSE) without statistically significant differences (p = 0.91). Physical activity in the time-free domain was P 50 = 0 (low-NSE), P 50 = 0 (medium-NSE) P 50 = 80 (high-NSE) minutes / week, statistically significant difference for high-NSE (p = 0.017). There is no correlation between environment and physical activity time in the transfer or free time dimension, disaggregated by neighborhood, sex or age (p <0.05). **Conclusions:** The perception of the environment is greater according to the NSE of the neighborhood. The time of transfer and free time does not correlate with the perception of the environment, although the time of physical activity of free time is greater in the commune of high NSE. The physical activity times in the transfer and leisure-time domains are low to obtain health benefits according to WHO criteria. **Relevance:** Evaluate the consistency of the evidence with other regions of the world due to the particular characteristics of the urban, political, cultural and social design of our region.

**Keywords:** Environment, Physical activity, Walking environments.

**Abstract code:** 22



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# Physical activity promotion in Colombia. A country level commitment, a model for Latin America

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Rev Bras Ativ Fis Saude 26(supl 3):82

**Background:** Fragility represents a current and upcoming problem in public health that requires immediate attention. Studies have shown a prevalence of fragility syndrome of 7% in the Mexican population. In 2019, a study concluded that the physical exercise program is capable of reversing functional limitation and fragility status. **Aims:** To determine the effect of physical exercise as a nursing intervention in older adults with fragility attending a gerontological center. **Methods:** Quantitative, quasi-experimental, prospective and longitudinal study. The FRAIL questionnaire applied to the population of 25 older adults from the "Hope to live" gerontological center in the urban area of Tetepango Hidalgo was used as a data collection instrument. Anthropometric measurements were made (arm, calf and waist circumference) determining muscle mass, in addition to using the timed get Up and Go test to quantify the walking time in seconds. **Results:** The prevalence of frailty was 80% in older adults before the intervention. The most frequent fragility criteria, according to the FRAIL questionnaire, were: tiredness, inability to climb stairs, and difficulty walking. From this result, the nursing intervention was implemented focused on physical exercise. After the intervention, the prevalence is 4% for fragile patients and 64% for pre-fragile patients. 16% of older adults presented a decrease in their muscle mass according to the measurement corresponding to calf circumference. These measurements have a strong correlation with the arm circumference ( $p < 0.01$ ). There was a significant difference in the measured walking time ( $p < 0.001$ ). **Conclusions:** Physical exercise is the best form of intervention in older adults with frailty and also contributes to the improvement of muscular strength, stability, and aerobic endurance of older adults. However, it is necessary to extend the intervention period to maintain the benefits offered by the exercise program. On the contrary, older adults often have slow gait movements. **Relevance:** The benefits of physical exercise for older adults are relevant to avoid, reduce or reverse physical, psychological and social problems that accompany the aging process, as well as being a healthy habit to protect the well-being of the elderly and thereby avoid the sedentary lifestyle in the Mexican population of older adults. Increasing strength and muscle mass is a realistic strategy to maintain the functional status and independence of older adults.

**Keywords:** Physical exercise, Elderly, Fragility.

**Abstract code:** 45



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