Analyses of the international physical activity questionnaire in adolescents

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ABSTRACT: This study verified the habitual physical activity (HPA) and analyzed the IPAQ in its short (SF) and long form (LF), in students of public (PS) and private schools (PR). The sample was composed of 102 subjects, 27 girls (G) ( =15.6±0.84 years old) and 27 boys (B) ( =15.9±0.83 years old) of the PS, and 23 G ( =15.9±0.85 years old) and 25 B ( =15.7±0.74 years old) of the PR. The SF and LF of the IPAQ were used comparing within-sex (WS), between-sex (BS), and inter-systems (IR). ANOVA + post hoc Tukey Test showed statistically significant difference (p<0.05) between the SF and LF BS, with G as more active with the SF in the PS. The WS comparison was statistically significant (p<0.05), presenting the B more active in the LF inside the PS sample. The IR analysis showed a statistically significant difference (p<0.05) in the SF for the B, with more active B in the PR. When analyzed difference among activities categories, It was evident that PS’s students have their predominant HPA in home and work tasks, and those from PRs, in leisure activities. Such results allow us to conclude that: a) there are differences between IPAQ SF and LF; b) PS students showed their predominant HPA in home and work tasks, and the ones from PR, in leisure activities. The incentive campaigns to the increase of the HPA at schools should focus according to the educational system.

Keywords: IPAQ, adolescents, students, level of habitual physical activity.
INTRODUCTION

Physical activity is a broadly used term and its heterogeneous nature turns that extremely difficult to characterize and to quantify (MOLNAR and LIVINGSTONE, 2000). The term is habitually defined as “any corporal movement produced by the skeletal musculature that results in energy expense” (CASPERSEN and col., 1985). It is of fundamental importance to distinguish the effects of the habitual physical activity (how much a person moves during his day by day) of the one of the systematized physical activity (how much an individual can accomplish a certain motive task). The first is a behaviour, while the second is an attribute (ROWLAND, 2001). The measure of the total energy expense is especially difficult in children, because many of the methods introduce behaviour changes in the spontaneous and natural patterns of the activities for them accomplished (MOLNAR and LIVINGSTONE, 2000).

The physical activity is the most variable component of the daily total energy expense and exist many difficulties associated with its measure, mainly in children, in most of the cases because the methods habitually used are not valid. From the classic studies driven by Mayer and col. (1954, 1956), other studies on the effects of the physical activity suffer for the tools limitations used to evaluate the physical activity (SCHOELLER, 1998).

The physical activity energy expense not always can be represented by the time spent in the exercise, because the energy expense spent in the physical activity includes the cost energy in agreement of all of the activities, including the sedentary ones (GORAN and col., 1997). Truth and col. (1998), using a calorimetric room and doubly marked water, they compared the energy expense in pre-pubescent girls with and without overweight, and they verified that the sedentary energy expense in 24 hours, the total expense energy diary and the consumption of submaximum oxygen, after having adjusted for the thin corporal mass and corporal weight, the energy expense of the physical activity and the level of physical activity (NAF) (NAF = total energy diary spend divided by the metabolic tax of rest) was not significantly different among the groups. However, those experimental situations change the child’s atmosphere, and the measures are not accomplished in the usual conditions of a typical day, underestimating the habitual energy expense.

Ekuland and col. (2002) found high NAF values in a control group owed not just to the participation in activities of high intensity, but at high daily levels of moderate intensity activities. Those authors suggest that the physical activity is not equivalent to the activity expense energy, because the time spent in the physical activity can be a more significant factor than the energy expense attributed for that determined activity; besides, the amount of worn-out time in moderate physical intensity activities, as well as the worn-out total in all of the physical activities is important contributions to be considered. We can add to the discussion the assertive of Bailey and col. (1995) that the children’s activities are not just of low intensity, but they are not also sustained along extensive periods of time. Molmar and Livingstone (2000), in agreement with that finishes position, they suggest that other methods should be applied together with the doubly marked water, once that technique, in spite of “gold pattern” to be considered, doesn’t supply information concerning the duration or intensity of the accomplished physical activities.
Pinho and Petroski (1999) detach the relevance of measuring the level of adolescents’ habitual physical activity through the diary expense. Referred authors still detach the studies shortage and the methodological difficulties for the development of the same ones.

The low level of the population habitual physical activity became a public health problem, demanding a high expense from the governments for the diseases treatment that could be softened by the simple increase of the daily energy expense (MATSUDO and col. 2001). It is worth to stand out, however, that some problems, as the obesity, are not just resulted of low levels of physical activities, but also of inadequacy of the energy balance, when the ingestion exceeds the expenditure (HILL, 2004). In many countries, especially those in development, the atmosphere encourages the ingestion of energy originating from tasty, convenient and cheap foods, with high energy density (PETERS and col., 2002), affecting fundamentally the children’s alimentary behaviour.

The maintenance of the energy balance reiterates the need to evaluate the habitual physical activities levels, mainly in children, because, as it happens at several countries, don’t exist data on secular patterns of physical activities in Brazilian children (MONTEIRO and col., 2000) that allow behaviour comparisons on habits of physical activities among different generations.

For the accomplishment of such measures is fundamental to have in hands necessary instruments, of easy application and with low costs. In that sense, a work group with researchers of Asia, Australia, North and South America, Africa and Europe, in meeting in the city of Geneva, in the year of 1998, it was proposed the development of a questionnaire to be used in national risings for the health evaluation related to the physical activity and that allowed the comparison among different countries. Such instrument received the denomination of IPAQ - International Physical Activity Questionnaire. IPAQ is the result of an united effort to standardize an instrument that can be applied in populations and specific groups, allowing like this the accomplishment of comparative analyses among them. After an extensive process of the subject’s development, pilot tests and revisions, eight questionnaires were tested in 2000, as for the reproducibility and validity, in 14 centers of research of 12 countries (Australia, South Africa, Brazil, Canada, United States, Finland, Guatemala, England, Italy, Japan, Portugal and Sweden), in the 6 continents. The use of the version 8 (eight) of IPAQ was defined, containing 9 items in the short form and about 30 items in the long form (AMORIM and GOMES, 2003).

The results of reliability validity and applicability presented satisfactory results, taking IPAQ to a valid instrument to be considered to be internationally applied (CRAIG and col., 2003). The IPAQ executive committee recommends the use in the short way in risings that aim the intervention, while the long form has better applicability with research intention (IPAQ, 2002). One of the IPAQ objectives, starting from the collected data, is the establishment of global goals of understanding and incentive to the practice of the physical activity.

Considering that a great amount of questionnaires exists and reminding for the measure of the physical activity in children, but that none of these instruments is accepted internationally as “pattern” for that measured (WHO, 2004), the use of IPAQ in this study has two objectives: a) to measure the levels of scholars’ of the public and private education system of both genders physical activity; and b) to compare the short and long forms of the International Physical Activity Questionnaire in those school ones. Being IPAQ a recent instrument, its application to scholars can come becoming a viable proposal for the Brazilian socio-economic conditions in the verified age group.

METHODOLOGY

The sample of this study was composed by students of the public and private nets of teaching of the city of Viçosa, Forest Area of the Minas Gerais state. The group was composed by 102 subjects, being 27 girls with age between 15 and 17 (15.6 ± 0.84 years) and 27 boys with ages between 15 and 17 (15.9 ± 0.83 years), of the public net, and 25 boys with age between 15 and 17 (15.7 ± 0.74 years) and 23 girls also with ages between 15 and 17 (15.9 ± 0.85 years), of the private net.

IPAQ was applied in its short term, that is composed by four subjects related to vigorous, moderate, walks as means of transportation and leisure activities and a subject involving the time spent in activities with the individual in seating position.

It was also applied the IPAQ long form, that is divided in five sessions: the first links to activities in the work, it is important to emphasize that the work understood in this session is that accomplished in a paid way or no, as for instance, the time spent at the school, university, being excepted the voluntary domestic work, because this possesses own session. The second session treats of the locomotion activities, being accomplished through self-driven vehicles, bicycles or through walk. The third session treats of the accomplished home activities. The leisure activities are told in the session four and the session five links at the seating worn-out time.

The individuals were classified in assets or inactive, in agreement with the time spend with the lifted up physical activities for IPAQ. For this classification the following definition criterion was used for active subjects: sum of at least 150 minutes a week of physical activities of moderate intensity, subdivided in at least 3 times / week or vigorous physical activities for at least 3 sessions of 20 minutes / week.

The results are exhibited as mean and pattern deviation by gender, for education system and for the form of the questionnaire (short or long). The one-way Anova was applied, following by Post Hoc Tukey at the significance level (p < 0.05) in the verification of the differences among the groups.

RESULTS AND DISCUSSION

Studies with the use of questionnaires for the classification of the habitual physical activity level of the population in general present some operational advantages, however such instruments don’t usually present good sensibility in all of the physical activity components (MACERA and col., 2001). For the use of questionnaires, the evaluation of defined specific groups for age, gender, social level and professional category are some important criteria that are adopted in the standardization of the instrument (NAHAS,
The present study aimed to measure the levels of scholars’ physical activity of the public and private education system of both sexes, as well as to compare the short and long forms of the International Physical Activity Questionnaire.

When accomplished intra-sex analysis in the short and long ways of IPAQ it was observed statistically significant difference for the masculine gender of the public net of teaching, with the long form of the questionnaire demonstrating more active subjects. In the feminine gender, for both teaching nets, significant differences were not verified.

When we compared the public net sample with the private net of teaching, in both forms of the questionnaire it was observed that the short form of IPAQ presented significant difference among the masculine gender, classifying as more it activates physically the sample of the private net. The analysis in the short way for the feminine gender didn’t present significant difference. The long form didn’t demonstrate significant difference among the teaching nets in none of the genders.

The analysis inter-sex presented significant difference just in the short form of the public net, where female individuals were classified as more assets physically. The other analyses inter-sex didn’t present significant difference.

We analysed the consistence of the answers in agreement with the classification and the type of accomplished activity. In that analysis, the public net presented significant difference in the vigorous activity for the feminine gender, with the long form demonstrating a percentile of adult individuals in that category. In what concerns the moderate activity, in both genders the long form also classified a percentile of adult subjects in that intensity.

In the analysis of the “walk” the masculine gender was classified as more physically active in the short form, while for the feminine gender this happened in the long form.

The answers consistence of the private net revealed the following results: in the moderate activity, boys and girls were classified as more physically assets in the long form of the questionnaire. The vigorous activities and walk, however, didn’t present statistically significant difference for none of the genders. These results are similar to the verified by Hallal, Victoria and Lima (2001) in study of validation of IPAQ in the city of Pelotas.

The Illustrations 1, 2, 3, 4 and 5 present the analysis of the time spend in the four sessions used by the questionnaire (work, transport, home and leisure) and total time considering the aspects that more influenced in the active individuals’ classification in agreement with the long form of IPAQ.

In the Illustration 1 it can be verified that, although the students of the public net of teaching have exhibited a percentile of active adult individuals in all of the sessions of long IPAQ, except in the “leisure”, the active individuals’ percentile largest belongs to the private net of teaching. And these percentile presented statistically significant difference just in the session “work”, where the students of the public school are more engaged.

The girls of the public net of teaching also presented larger percent values of physically assets individuals in absolute terms, as well as in all of the sessions, being excepted, as well as the boys, the session “leisure”, where it can be verified statistically significant difference.
difference, with the students of the private net exhibiting higher percentile. When verified the physical activities accomplished in the item “home”, it is verified statistically significant difference, with the students of the public net exhibiting a great predominance in activities of this category (Illustration 2).

The students of the public net of teaching shown more physically assets in all of the categories of activities approached by IPAQ, being just excepted the session “leisure”, although this difference has not been statistically significant. However, the differences in the sessions “work” and “home” were statistically significant (Illustration 3). The largest percentile participation of the activities “work” and “transport” presented by the sample of the public net can be considered as an indicative of the socioeconomic differences habitually exhibited by the students of the two education systems.

The inter-sex analysis of the public net of teaching (Illustration 4) demonstrates that the feminine gender presents percentile total larger than the masculine, fundamentally influenced by the activities accomplished at home, item that presented statistically significant difference, revealing that, in absolute terms, the girls accomplish 3 times more activities in this session than the boys, while in the other sessions certain balance can be verified among the genders. Such difference presented in the session “home” allows us to speculate that this is a cultural characteristic that still ingrained in our society, which most of the domestic work is still considered as of female responsibility.

When considered the two teaching nets together, although (Illustration 5) the masculine gender has presented absolute larger percentile than the feminine in what concerns the physical activities levels, statistically significant difference were not verified in none of the sessions approached by IPAQ.

Certain lack of information exists regarding the use of questionnaires in Brazilian adolescents, however we can mention some initiatives that looked to accomplish a rising of the level physical activity in that age group, with that instrument type, like the studies of Loch, Oliveira and Nahas (2001); Pires, Farias Jr and Lopes, (2001) and Pires, Lopes and Pires (2002). Regarding IPAQ, specifically, we found publications that look to correlate to nutritional indicators in adolescents (FARIA and AMORIM, 2002; Amorim et al., 2006); in specific population groups, as academical (COHEN, 2002; FARIA, PINTO and AMORIM, 2002 HORTA and col., 2002; SILVA, 2002), health agents (ROCHA, 2002); and, still, other testing validity and reproducibility in seniors (BENEDETTI and col., 2001, 2002), as well as in stocking women (SILVA, 2001) and third age (MATSUDO and col., 2002).

CONCLUSIONS

Starting from the answers consistence, we can conclude that IPAQ in short form tends to present inferior values in the individuals’ classification as for the level of habitual physical activity, when compared with the long form. These results are similar to the verified by Hallal, Victoria and Lima (2001), however they should be considered with caution, because the largest limitation of this study consists of the lack of a method “gold standard” for the measure of the physical activity, capable to increase the reliability and generalization of our discoveries.

Another aspect being considered was the fact that just the masculine gender of the public net of teaching presented significant differences when compared all the other groups (gender, net and questionnaire form), exhibiting smaller total time of daily practice of physical activity through the short form of the questionnaire. We cannot find explanations for this fact, however that in the group to speculate possible problems of understanding of the subjects in the short form for that sample subgroup.

A last consideration in relation to the teaching nets in the analysed sample concerns to the components of the expense total energy of the habitual activities, according to which it was verified that the students of the public net of teaching tends to spend their time with physical activity in the domestic activities, while the students of the deprived net present as major component of the time of the physical activity, the leisure activities. That verification deserves attention, because it demonstrates different needs for the two groups that, in spite of they doesn’t differ concerning the absolute level of habitual physical activity, they exhibit outstanding differences in the relative participation of their several components. Such fact takes us to believe that the incentive campaigns to the increase of the energy expense through the physical activities increment in the day-by-day should be accomplished with different focuses for the two teaching nets.

Studies with IPAQ in scholars still in the beginning, and increase the need of new works using comparisons with “gold pattern” methods and applied in samples of several areas of the country, allowing a larger results generalization verified in this age group.

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REFERENCES


