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Cultural adaptation of the Brazilian version of the Godin-Shephard Leisure-Time Physical Activity Questionnaire

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ABSTRACT

OBJECTIVE: To conduct the cultural adaptation of the Brazilian version of the Godin-Shephard Leisure-Time Physical Activity Questionnaire (GSLTPAQ) and to assess its content validity, practicability, acceptability and reliability.

METHODS: The stages of translation, synthesis, back translation, expert committee review and pre-test were carried out, followed by the evaluation of the practicability, acceptability and reliability (test-retest). The judges assessed its semantic, idiomatic, conceptual, cultural and metabolic equivalences. The adapted version was submitted to the pre-test (n = 20), and test-retest (n = 80), in healthy individuals and in those suffering from cardiovascular disease in Limeira, SP, Southeastern Brazil, between 2010 and 2011. The proportion of agreement of the committee of judges was assessed using the Content Validity Index. Reliability was assessed by the criterion of stability, with 15 days between applications. Practicability was evaluated by the time spent interviewing and acceptability was estimated as the percentage of unanswered items and the proportion of patients who responded to all items.

RESULTS: The translated version of the questionnaire showed evidence of appropriate semantic-idiomatic, conceptual, cultural and metabolic equivalence, with substitutions of several physical activities more appropriate to the Brazilian population. The practicability analysis showed short time needed for the application of the instrument (mean 3.0 minutes). As for acceptability, all patients answered 100% of the items. The test-retest analysis suggested that stability was good (Intraclass Correlation Coefficient value of 0.84).

CONCLUSIONS: The Brazilian version of the questionnaire showed satisfactory measures of the qualities in question. Its application to diverse populations in future studies is recommended in order to provide robust measures of these qualities.

DESCRIPTORS: Motor Activity. Sports. Leisure Activities. Sedentary Lifestyle. Health Evaluation. Questionnaires. Translations. Validity of Tests. Reproducibility of Results.

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INTRODUCTION

The main measures of the behavior of physical activity (PA) are physiological indicators (oxygen consumption, heart rate) and self-reported measures (questionnaires or diaries, for example).[6] Questionnaires have been widely used due to their applicability, low cost and because they allow accurate information to be collected on the type and context of activities which take place.[6]

The Godin-Shephard Leisure-Time Physical Activity Questionnaire (GSLTPAQ)[13] was developed in Canada in 1985, aimed at measuring leisure-time physical activity (LTPA). The questions in the instrument were drawn up after careful evaluation of items used in other instruments which had proved, in univariate analysis, to successfully discriminate sedentary individuals from active ones.[13]

The original questionnaire was validated among 306 health individuals, testing its correlation with the predicted maximal oxygen consumption and body fat percentage. This questionnaire has been widely used on a global level among different populations affected by health problems such as colorectal[20] and breast cancer,[22] multiple sclerosis[16] and sleep apnea.[19] When it was created, its reliability was estimated at 0.94 for the strenuous activities score and 0.74 for the total LTPA score, using the Kappa index.[13]

It is a short questionnaire, designed to be self-administered and aimed at evaluating the frequency and intensity of PA carried out during one week. The respondent reports the number of times in which he/she performs at least 15 minutes of strenuous, moderate and mild PA in a typical seven-day-period. The frequency reported by the individual is multiplied by the coefficient of exertion corresponding to the energy expenditure in metabolic equivalents (MET) of the activity in question, producing a score in arbitrary units. Higher scores indicate a higher level of LTPA, and lower scores, lower levels of LTPA.[13]

The GSLTPAQ, having been especially validated to recognize the practice of strenuous and moderate PA, may also be used with populations who perform mild activities. Its easy application and validity of estimating PA attracted the interest of researchers, especially after having been included in a special edition of *Medicine and Science in Sports and Exercise*,[5] in 1997, as a valid tool for measuring PA. In that edition, the tool was named *Godin Leisure-Time Exercise Questionnaire*. However, in a 2011 review, Godin renamed it the Godin-Shephard Leisure-Time Physical Activity Questionnaire,[12] stating that, according to Google Scholar, the questionnaire had been cited around a thousand times. Consulting the electronic database Medline (PubMed version), 83 scientific citations of the instrument were found, ratifying its use in the scientific community.[a]

Godin12 proposed categorizing the total GSLTPAQ score as "active", "moderately active" or "insufficiently active", according to international recommendations,[b] with the aim of respecting the dose-response relationship between the volume of physical activity and health benefits it provides.

LTPA has received a lot of attention in recent years. Caspersen et al[8] state that individuals who report doing no physical activity in their leisure time had lower levels of physical activity in their daily life, suggesting that LTPA constitutes an important part of physical activity related to being physical inactive.

There are no instruments specifically designed to measure LTPA in Brazil and measuring this construct is important both for those with cardiovascular disease (CVD) and for healthy individuals.

Therefore, the aim of this study was to carry out the cultural adaptation of the Godin-Shephard Leisure-Time Exercise Questionnaire to the Brazilian Portuguese language and evaluate its acceptability, practicability and reliability with regards to temporal stability.

METHODS

The term 'cultural adaptation' has been used to cover a process which analyzes language/translation in the process of drawing up a questionnaire to be used in another situation.[7] Through this adaptation – bearing in mind cultural differences in perceptions of health, language, cultural context and the lifestyle of the population in question[1] –, it was possible to maintain linguistic and cultural equivalence of the items in the instrument, as well as its relevance, even with the necessity of occasionally modifying them for the culture in question.[7]

In our study, the process of cultural adaptation was developed based on the widely used methodology proposed by Beaton et al.[7] This methodology delimits the process to the specific stages of initial translation, synthesis of translations, back-translation, revision by an expert committee and a test of the pre-final version.[7]

[a] US National Library of Medicine. Citations of Godin and Shephard, 1985, in PubMed Central Articles. [cited 2011 Set 2]. Available from: http://www.ncbi.nlm.nih.gov/pubmed?db=pubmed&cmd=link&linkname=pubpub_pubmed_citedin&uid=4053261

[b] Centers for Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition and Physical Activity. Promoting physical activity: a guide for community action. Champaign: Human Kinetics; 2010. Achieving a moderately active lifestyle; p.15-37.

After obtaining the author's permission, the original version of the GSLTPAQ was translated, independently, by two bilingual translators whose native language was Brazilian Portuguese. One of the translators was informed of the conceptual structure and objectives of the scale to be translated and the other carried it out with no knowledge of the objective, as recommended.[1,7]

To synthesize the translations, the translated versions of the instrument – translation 1 (T_1) and translation 2 (T_2) – were analyzed and compared by the researchers and by a mediator – professional translator – according to international norms.[4] Discrepancies between T_1 and T_2 were analyzed until consensus was reached, and a single translated version of the GSLTPAQ ($T\text{-}_{12}$) was produced.

This synthesis (T_{-12}) was translated back into English in a process called back-translation. The back-translation was carried out by two other bilingual translators, whose native language was English and who had not participated in the stage of translations. These translators were not informed of the concept and objectives of the instrument and had no academic education in the area of health care. At the end of this stage, two versions of the back-translation were obtained – back-translation 1 (BT_1) and back-translation 2 (BT_2) – with the aim of revising the translations and avoiding possible ambiguous interpretations.[1,7]

A panel of specialists was set up to assess the semantic, idiomatic, conceptual and cultural equivalencies of the items in the original instrument and the translated version of the GSLTPAQ, with the aim of obtaining one single version to be used in the pre-test stage.[2]

Seven bilingual recognized experts in the area took part in the committee, having first met at least one of the following criteria: recognized knowledge in cultural adaptation, experience or having worked in the area, experience in research involved with applying measuring instruments and skill in recognizing expressions in the English language, as well as being at ease in Brazilian Portuguese.

This committee's instrument contained as annexes the translated versions, the synthesis of the GSLTPAQ, the back-translations and a guide for evaluating the translated version of the GSLTPAQ, according to semantic, idiomatic, cultural and conceptual equivalences, properties defined as following:

- *Semantic-idiomatic equivalence*: whether the items translated into Portuguese preserved the meaning of the original version;
- *Cultural equivalence*: whether the situations described in the items corresponded to situations experienced in the Brazilian cultural context;
- *Conceptual equivalence*: whether the situations described in the items really evaluate the physical activity that would be carried out by cardiac patients.

Bearing in mind that the original version of the GSLTPAQ is mostly composed of physical activities commonly carried out in the Canadian culture, it was decided to substitute the physical activities in the original instrument, which were considered to be incompatible with Brazilian culture, for activities considered common in that culture. Thus, based on the metabolic equivalents provided by the Brazilian version of the Ainsworth Compendium of Physical Activities,[10] the physical activities deemed to be incompatible with Brazilian culture were substituted by others, specific to the Brazilian context and metabolically equivalent to those originally described.

The committee for evaluating metabolic equivalence was formed of three judges with experience in teaching and research, using objective instruments for measuring and evaluating physical activity and cardiorespiratory fitness. The experts were instructed to examine the metabolic equivalence, consisting of analyzing whether the physical activities contained in the items in the original instrument and those which substituted them in the Brazilian version, possessed the same energy expenditure as the activities in the original GSLTPAQ.

At the end of the content validation stage, the pre-test was carried out, using the adapted version on 20 individuals (ten with hypertension and ten healthy volunteers) in a university hospital in Campinas, SP, Southeastern Brazil, in October and November 2010. After responding to each item on the scale, the participants were interviewed with the aim of investigating the problems they perceived in understanding each statement, as well as identifying terms that were difficult to understand. It was also investigated whether the participants had problems in the scoring scale of the statements.

After the content validation the instrument was assessed as to its practicability, acceptability and reliability.[1,7]

The instrument's validation stage was carried out in a specialized outpatient clinic in Limeira, in the state of Sao Paulo.

Individuals with coronary artery disease (CAD) or hypertension and healthy individuals being treated in the above mentioned outpatient clinic were enrolled. Among the patients with CVD were included individuals who: had been cleared by their doctors to perform physical activity, were not taking part in a cardiac rehabilitation program and were capable of effective oral communication. The healthy individuals were those who presented no health problems or other condition which would affect or proscribe the ability to work (hypertension, heart disease, diabetes mellitus,

orthopedic or vascular problems and cancer) and who were not taking any medicines such as beta blockers, anti-hypertensives or diuretics.

To verify the inclusion of healthy individuals, a checklist of criteria for inclusion was drawn up. Although the checklist did not ensure the participants' state of health, it evidenced no CVD diagnosis.

Any participants (among those with CVD and the healthy individuals) who had other clinical conditions which made it impossible for them to regularly perform physical activity – such as motor problems of neurological origin, vascular, orthopedic or other conditions as well as those individuals who, on the day of the cardio-pulmonary exercise test, had taken medication capable of altering the heart rate (such as beta-blockers) – were excluded from the sample.

Those whose liberation to engage in physical activity was suspended and/or those who dropped out of the study during the data collecting stage, or who were unable to attend the again were also not included in the study.

The sample was composed, sequentially, of individuals who were followed in the abovementioned clinic, according to the inclusion and exclusion criteria, enrolled in the research in the period set for data collection, October 2010 to July 2011.

Partial correlation coefficients between measures of physical activity and cardiorespiratory fitness were calculated with the respective 95% confidence intervals (95%CI), with the aim of ensuring adequate sample size, as well as the reliability and reproducibility of the findings.[21]

The data were gathered individually, in a private environment, in two stages. In the first step (Time 0), formal consent for participating in the study and socio-demographic and clinical data through interviews and medical records were obtained. The measures of psychosocial variables were obtained in structured individual interviews in order to ensure the uniformity of the data, as the majority of the subjects presented low levels of schooling in years of study. At this time, the adapted version of the GSLTPAQ was administered in an interview (test). Later, the Brazilian version was reapplied (retest – Time 1) using a proportion of the subjects who had participated in the test, in similar conditions, with an interval of 15 days between the first and second application.[17] Only those participants who already had a return appointment in the abovementioned clinic (n = 80) took part in this stage.

To collect the data, previously content validated instruments aimed at characterizing socio-demographic and clinical data were used. The GSLTPAQ was administered as an interview, considering its two questions: the first approaches the frequency and intensity of LTPA; the second is aimed at other activities that lead to sweating and, therefore, present energy expenditure.[12,13] To calculate the total LTPA score, only the answers to the first question were considered, as recommended. Thus, in this question, the individual reported the number of times in which he/she did at least 15 minutes of physical activity of strenuous, moderate or mild intensity. The response for each type of physical activity is multiplied by a coefficient of exertion (MET) that includes a constant. This coefficient is 9 for strenuous physical activity, 5 for moderate physical activity and 3 for mild physical activity, resulting in the following equation:

Total LTPA score = (9 x strenuous physical activity) + (5 x moderate physical activity) + (3 x mild physical activity)

In 2011, Godin[12] categorized the total LTPA score as described in Table 1. This paper suggested that only the frequency of strenuous and moderate physical activity should be considered when calculating the total GSLTPAQ score, as the majority of activities classified as "mild" in the original instrument do not provide substantial health benefits, apart from walking and golf.[12] However, considering that walking plays an important role in the Brazilian range of physical activities,[23] it was decided to maintain the total GSLTPAQ score, also including the mild physical activities. Thus, the results are shown according to both scores, including and excluding mild activities. In contrast to the original questionnaire, in this study it was decided to use an interview format, considering the low socio-economic level of the target population.

The GSLTPAQ's practicability and acceptability were evaluated in the pre-test stage. Practicability refers to the time needed to apply the instrument, the cost of the method and any specifications about the location and

Table 1. Categorization of the Godin-Shephard Leisure-Time Physical Activity Questionnaire[a] score.

Total LTPA score (arbitrary units)	Energy expenditure (kcal/kg/week)	Individual's classification	Benefits of the physical activity
< 14	< 7	Insufficiently active	Less substantial
14-23	7-13,9	Moderately active	Some
≥ 24	≥ 14	Active	Substantial

LTPA: Leisure Time Physical Activity
[a] Adapted from Godin[12]

situations in which the questionnaire can be applied. Acceptability is related to the respondent's understanding of the items which form the questionnaire, demonstrated by the percentile of missing or refusal of the items of a questionnaire.[17] The reliability of the Brazilian version of the GSLTPAQ was evaluated using the test-retest.

In order to evaluate the semantic-idiomatic, conceptual, cultural and metabolic equivalence the Content Validity Index (CVI), which measures the proportion or percentage of judges in agreement about the general items and aspects evaluated was used.[2] This calculation enables each item which composes the instrument to be analyzed individually and as a whole. The relevance and representativeness of the items are evaluated using a Likert-type scale with scoring which varies from 1 up to 4 (1= not relevant or representative; 2 = needs major alterations in order to be representative; 3 = needs minor alterations to be representative; 4 = relevant or representative). The CVI was calculated by summing the total of the items which received scores of 3 or 4, divided by the total number of responses.[2] The items which received scores of 1 or 2 were revised.

In the descriptive analysis, frequency tables were drawn up, measuring position (mean, median, minimum and maximum) and dispersion (standard deviation) for the sociodemographic and clinical data and for the total GSLTPAQ score. In the pre-test stage, the practicability – related to the amount of time spent on interviews, measured in minutes – and the acceptability – estimated by the percentage of items not responded to and the proportion of patients who responded to all of the items – were evaluated.

In the reliability analysis, with regards to the stability of the measure, a concordance between repeated measurements (test-retest) was verified using the intra-class correlation coefficient (ICC). Stability of the measure was deemed to be ICC > 0.90.[11]

The level of significance was deemed to be p-value ≤ 0.05.

The Statistical Package for Social Sciences, version 17.0, was used to carry out the statistical analysis.

The study was approved by the Ethics Committee of the of the *Faculdade de Ciências Médicas* of the *Universidade de Campinas*, on 24th November 2009 (Document 1.062/2009). All the enrolled participants signed the consent form.

RESULTS

Regarding the content validity, after the GSLTPAQ's semantic-idiomatic, conceptual and cultural equivalence evaluation by judges, small changes related to some translated terms were suggested, such as substituting the word "rapidamente" (Brazilian Portuguese for *rapidly*) for the expression "muito rápido" (Brazilian Portuguese for *very fast*).

The proportion of agreement between the experts on the analysis of the semantic-idiomatic, conceptual and cultural equivalences is shown in Table 2. With the aim of facilitating the specialists' evaluation, the instrument was divided didactically into 11 sections/items, including the title of the instrument, the instructions, the questions themselves and the instructions for obtaining the score.

Table 2. Scores obtained in the evaluation of semantic-idiomatic. conceptual and cultural equivalence for items from the Brazilian version of the Godin-Shephard Leisure-Time Physical Activity *Questionnaire* and respective content validity indexes. Campinas, SP, Southeastern Brazil, 2010.

Item	Judge 1			Judge 2			Judge 3			Judge 4			Judge 5			Judge 6			Judge 7			CVI		
	SI	CO	CUL	SI	CO	CUL	SI	CO	CUL	SI	CO	CUL	SI	CO	CUL	SI	CO	CUL	SI	CO	CUL	SI	CO	CUL
1	4	4	4	3[c]	4[d]	4	4	4	1[a]	3	3	4	4	4	4	4	4	4	4	4	4	1.0	1.0	0.8
2	4	4	4	3	3	3	4	4	1	4	4	4	3	4	3	4	4	4	3	3	4	1.0	1.0	0.8
3	4	4	4	3	3	3	4	4	1	3	4	4	4	4	4	4	4	4	4	4	4	1.0	1.0	0.8
4	3	3	3	3	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	1.0	1.0	1.0
5	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1.0	1.0	1.0
6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1.0	1.0	1.0
7	3	4	4	3	3	3	4	4	1	3	2[b]	3	3	3	3	4	4	4	3	4	3	1.0	1.0	0.8
8	4	4	3	3	4	4	4	4	1	4	2	3	3	3	3	4	4	4	4	4	3	1.0	1.0	0.8
9	4	4	4	2	3	3	1	1	1	4	4	4	3	3	3	4	4	4	4	4	4	0.7	0.8	0.8
10	4	4	4	3	4	4	4	4	1	3	4	4	3	3	3	4	4	4	4	4	4	1.0	1.0	0.8
11	4	4	4	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4	3	4	4	1.0	1.0	1.0

SI: Semantic-idiomatic equivalence; CO: Conceptual equivalence; CUL: Cultural equivalence; CVI: Content Validity Index
[a] 1 = not relevant or not representative
[b] 2 = needs major revisions to be representative
[c] 3 = needs minor revisions to be representative
[d] 4 = relevant or representative

The results indicated CVI between 0.8 and 1.0 in ten (10) of the eleven (11) items evaluated. Only the item 9 obtained CVI below 0.75, which was then revised to obtain a consensus between the judges.

The judges' analysis of metabolic equivalence is shown in Table 3. The results showed CVI = 1.0 in eleven (11) of the thirteen (13) items evaluated. Only the items "squash", substituted in the Brazilian version for "skipping rope", and the item "baseball", replaced with "riding a bicycle (without much effort)", obtained CVI lower than 0.75, and were revised to obtain the judges' consensus.

The pre-test sample (n = 20) was composed mainly of women (60.0%), with a mean age of 53.7 (7.3) years old, whites, with 5.2 (2.7) years of schooling, cohabiting; professionally active; with low individual and household income. Of those with CVD, 50.0% had been diagnosed with hypertension, 50.0% with CAD and 20.0% were overweight or obese. The re-test sample (n = 80), distinct from the pre-test sample, was also composed of a majority of women, with a mean age of 53.2 (10.4) years old, whites, with low levels of schooling; cohabiting; professionally active; with low individual and family income (Table 4).

With regards to the practicability of the Brazilian version of the GSLTPAQ evaluated at the pre-test (n = 20), the results suggest that it is an easy-to-apply instrument, with a mean application time of 3.0 (SD = 0.5) minutes.

With regards to the acceptability, the findings indicate that the instrument was simple to understand, as 100% of the patients responded to all of the items. The interview carried out with the patients who participated in the pre-test, after the GSLTPAQ had been applied, revealed that the patients understood what was being asked.

The GSLTPAQ showed reliability with regards to temporal stability, expressed by an intraclass correlation coefficient (ICC) of 0.84 for the total LTPA score, including mild physical activities and 0.81 for the score not including mild physical activities. As for the weekly frequencies of type of physical activities reported, strenuous physical activities represented the ICC = 0.79, moderate physical activities had an rate of 0.80 and mild activities of 0.82 (Table 5).

DISCUSSION

Through the content validation stage, using two committees of experts to analyze the semantic-idiomatic, conceptual, cultural and metabolic equivalences, the instrument was assessed as being equivalent, having undergone some small adjustments. Some of the examples of physical activities, which illustrate the questions of the original instrument, were substituted to better meet the characteristics of the Brazilian population. Two examples of strenuous physical activities present in the original instrument were excluded as they were assessed as not being equivalent to other similar activities in the Brazilian population.

Table 3. Scores obtained in the evaluation of metabolic equivalence for each of the items in the Brazilian version of the Godin-Shephard Leisure-Time Physical Activity Questionnaire and respective content validity indexes. Campinas, SP, Southeastern Brazil, 2010.

Activity		Judge 1	Judge 2	Judge 3	CVI
Original	Suggested substitution	MET	MET	MET	
Hockey	Skating	4[c]	3[b]	4	1.0
Squash	Skipping rope	1[a]	3	4	0.7
Skiing	Swimming	3	4	4	1.0
Baseball	Cycling (without much exertion)	1	4	4	0.7
Badminton	Basketball	4	4	4	1.0
Bow and arrow	Walking	4	4	4	1.0
Golf	Walking	4	4	4	1.0
Skiing	Swimming	3	3	4	1.0
Folk dancing	Ballroom dancing	4	4	4	1.0
Yoga	Stretching	4	4	4	1.0
Bowling	Walking the dog	4	4	4	1.0
Pitching horseshoes	Non-competitive Volleyball	4	4	4	1.0
Snowmobiling	Exercise bike	4	4	4	1.0

MET: Metabolic Equivalent of Task; CVI: Content Validity Index
[a] 1 = not relevant or not representative
[b] 3 = needs minor revisions to be representative
[c] 4 = item relevant or representative

Table 4. Distribution and socio-demographic characterization of the participants in the pre-test (n = 20) and test-retest (n = 80) stages. Campinas and Limeira, SP, Southeastern Brazil, 2010-2011.

Variable	Pre-test (n = 20)						Test-retest (n = 80)					
	Men		Women		Total		Men		Women		Total	
Number of subjects (n, %)	8	40.0	12	60.0	20	100.0	32	40.0	48	60.0	80	100.0
Mean age (sd), in years	50.1	(7.7)	55.6	(6.6)	53.7	(7.3)	55.4	(10.1)	51.7	(10.5)	53.2	(10.4)
Skin color (n, %)												
White	7	87.5	10	83.3	17	85.0	27	84.4	37	77.1	64	80.0
Not white	1	12.5	2	16.7	3	15.0	5	15.6	11	22.9	16	20.0
Mean schooling (sd) in years	4.6	(2.6)	5.7	(2.8)	5.2	(2.7)	6.0	(3.0)	4.4	(2.6)	5.1	(2.9)
Mean individual income (sd) in MW	1.8	(1.5)	1.9	(1.6)	1.9	(1.6)	2.8	(2.1)	1.2	(1.4)	1.8	(1.8)
Mean household income (sd) in MW	3.2	(1.1)	2.9	(1.8)	3.0	(1.6)	3.3	(2.3)	2.5	(1.8)	2.8	(2.0)
Mean BMI (sd),in kg/m^2	26.9	(2.4)	28.7	(3.6)	28.0	(3.3)	29.4	(5.1)	30.9	(6.4)	30.2	(5.9)

MS: Minimum wage 6/24/2011 = R$ 545.00
BMI: Body Mass Index

The Brazilian version of the GSLTPAQ was pre-tested on 20 individuals in order to evaluate its practicability and acceptability, as it takes only a short time to be applied and is easy for the target population to use. To evaluate the reliability, the questionnaire was applied among 80 respondents in a distinct context, obtaining satisfactory results for temporal stability.

The transcultural adaptation required a methodology which aimed to achieve equivalence between the original source and the target languages,[3,7] which requires both linguistic translation and cultural adaptation to maintain the instrument's content validity in different cultures. It can therefore more reliably describe the impact of an illness or its treatment in a similar form, with multi-centric and multinational trials.[7]

LTPA has received a lot of attention due to the fact that there is less physical activity in the workplace in industrialized countries (due to technology and automation present in workplace tasks), meaning that LTPA more exactly represents the physical activity practiced by the economically active population.[18]

Thus, studies state that subjects who report not practicing LTPA have lower levels of physical activity in their daily activities, suggesting that LTPA is the most robust dimension of the practice of physical activity related to physical inactivity.[8] Thus, measuring it properly becomes relevant in the context of health care in Brazil and in the world.

International studies have also suggested the good validity and reliability of the GSLTPAQ among patients with chronic illness.[16,19,20,22] In a revision of ten questionnaires used to measure physical activity among healthy individuals, the GSLTPAQ stood out for the indicators of reliability.[14]

Recently, Godin[12] suggested that calculating the instrument's total score should only consider the frequency of strenuous and moderate activities, as the majority of activities listed as mild in the original instrument did not provide substantial health benefits, with the exception of golf and light walking. However, in this study, some activities were substituted and, bearing in mind that light walking plays an important role in the Brazilian range of LTPA, it was decided to present total LTPA scores also taking into account mild physical activities.

This study had limitations with regards to the validity of the self-reported measurements of physical activities. However, the benefits of this study for national and international literature should be considered, as it provides a practical tool with good indicator of reliability for the study of LTPA, in addition to enabling the results of Brazilian and international studies to be compared. In addition to this limitation, there is also the heterogeneous aspect of the Brazilian population to

Table 5. Intraclass correlation coefficients (ICC) and respective 95% confidence intervals (95%CI) for the Brazilian version of the Godin-Shephard Leisure-Time Physical Activity Questionnaire (n = 80). Campinas and Limeira, SP, Southeastern Brazil, 2011.

Self-reported LTPA	ICC	95%CI
Type of physical activity		
Strenuous	0.79	0.67;0.86
Moderate	0.80	0.69;0.87
Mild	0.82	0.72;0.88
Total LTPA score		
Including mild activities	0.84	0.75;0.90
Excluding mild activities	0.81	0.70;0.88
Sweat-inducing activities	0.73	0.58;0.83

LTPA: Leisure Time Physical Activity

consider, as it is a populous country characterized by different cultural aspects. Thus, it is recommended that the questionnaire be applied in different regions of the country, besides the South East, among individuals with diverse socio-demographic and clinical characteristics.

The continuity of studies for validating the Brazilian version of the GSLTPAQ is essential with a view to their use in clinical practice and research, as well as to support its widespread use in the Brazilian context in different populations.

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