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COMMENTARY

The Godin-Shephard Leisure-Time Physical Activity Questionnaire

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Abstract

The aim of this paper is to overview the development process of the Godin and Shephard leisure-time physical activity questionnaire, to present the questionnaire and how to compute an overall score as well as a score related to health benefits.

Introduction

The first research activity I undertook as a doctoral student under the supervision of Dr. Roy Shephard at the University of Toronto was to scrutinize the scientific literature in order to identify appropriate and valid instruments to assess the level of physical activity of children and of their parents. This was justified by my interest in identifying the determinants of physical activity of children, the topic of my doctoral thesis at the Graduate Department of Community Health. Very quickly, we came to the conclusion that the available instruments were either not valid for the purpose of my study or were lengthy, difficult to use, and subject to a number of biases (such as memory and social desirability).

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We therefore undertook the task to develop a new instrument to fit the needs of my doctoral thesis research project. With the cooperation of the athletic department (mainly Dr. Michael Cox), we obtained access to a number of participants among those who were members of the university (staff, students). The validation strategy consisted in the assessment of the main determinants of physical fitness (i.e., maximal aerobic power (VO₂max), percentage of body fat) and to verify if the score obtained with the questionnaire correlated with these determinants (alone and in combination) and correctly classified individuals according to categories of fitness. The main results of our validation study (Godin and Shephard, 1985) indicated the following correlation values between the questionnaire and percentile VO₂max ($r = 0.24$, $p < 0.001$) and percentile body fat ($r = 0.13$, $p < 0.01$). Also, the correct classification as fit or unfit individuals was 69%.

Interestingly, this paper first appeared as an appendix of my thesis (Godin, 1983) since it was “secondary” to the main aim of the study. We subsequently decided to publish the paper in The Canadian Journal of Applied Sport Science (Godin and Shephard, 1985). Although this journal was renamed in 1986, the manuscript remained very “popular” for a few reasons. First, it was included as one

of the validated tools in a special issue of Medicine and Science in Sports and Exercise (American College of Sport Medicine, 1997). In addition, a few researchers have tested the validity of a number of tools including our questionnaire and reported data that confirmed its validity to assess leisure-time physical activity (Gionet and Godin, 1987; Jacobs et al., 1993; Miller et al., 1994; Sallis et al., 1993). Finally, the questionnaire is a simple and easy to use instrument that does not require high self-reporting skills. As an indicator of its usefulness, according to Google Scholar, to this day it has been cited nearly a 1000 times.

The questionnaire

The questionnaire (see Figure 1) allows the assessment of self-reported leisure-time physical activity. The leisure-time physical activity score is expressed in units and can be computed in two steps. First, weekly frequencies of strenuous, moderate, and mild activities are multiplied by nine, five, and three, respectively; these three latter values correspond to MET value categories of the activities listed. Then, the total weekly leisure activity score is computed in arbitrary units by summing the products of the separate components, as shown in the following formula:

Weekly leisure-time activity score = $(9 \times \text{Strenuous}) + (5 \times \text{Moderate}) + (3 \times \text{Mild})$

EXAMPLES FOR COMPUTING THE OVERALL SCORE

- Strenuous = 2 times/wk
- Moderate = 2 times/wk
- Mild = 7 times/wk

Total leisure-time activity score
= $(9 \times 2) + (5 \times 2) + (3 \times 7)$
= $18 + 10 + 21 = 49$ units

I have been asked on several occasions what was the meaning of the final score expressed in units in reference to health contribution. On this regard, I suggest to use the reported frequency of strenuous and moderate activities (excluding mild intensity) to compute a health contribution score. Indeed, with the exception of easy walking and golf (if walking), the nature of the activities listed in the «Mild exercise» category are not strong contributors to health benefits. Consequently, a final score in units obtained with activities in the intensity categories of strenuous and moderate activities, would most likely be better than the same score obtained with a combination of activities in all three intensity categories. This approach is also justified given that in our validation study (Godin and Shephard, 1985), the strongest correlation between subjective and objective data related to percentile VO_2max ($r = 0.38$, $p < 0.001$), and the percentile VO_2max discriminant function (fit versus unfit individuals) was determined mainly by strenuous exercise. To be aligned with recommendations formulated by the Surgeon General (U.S. Department of Health and Human Services, 1996, 1999), and the “dose – response” relationship between the volume of physical activity and health benefits, the following categories should be adopted:

- 24 units and more (i.e., about 14 kcal/kg/week or more)
- 14 to 23 units (i.e., between 7 and 13.9 kcal/kg/week)
- less than 14 units (i.e., less than 7 kcal/kg/week).

Figure 1: THE GODIN AND SHEPHARD LEISURE-TIME PHYSICAL ACTIVITY QUESTIONNAIRE

During a typical **7-day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your free time (write on each line the appropriate number).

	Times per week
STRENOUS EXERCISE (HEART BEATS RAPIDLY) (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)	_____
MODERATE EXERCISE (NOT EXHAUSTING) (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)	_____
MILD EXERCISE (MINIMAL EFFORT) (e.g., yoga, archery, fishing from river bank, bowling, horseshoeing, golf without using a cart, snow-mobiling, easy walking)	_____

Adapted from Godin, G. (1983). Psychosocial factors influencing intentions to exercise in young students. Graduate Department of Community Health, University of Toronto, Toronto.

THE GODIN-SHEPARD LEISURE-TIME PHYSICAL ACTIVITY QUESTIONNAIRE

In summary, in reference to the score in units obtained using only moderate and strenuous physical activities, we can adopt the following rule:

- 24 units or more: Active (*Substantial benefits*)
- 14 to 23 units: Moderately active (*Some benefits*)
- Less than 14 units: Insufficiently active (*Less substantial or low benefits*)

EXAMPLES FOR COMPUTING A SCORE RELATED TO HEALTH

A) Examples of ways to obtain the level of 24 units or more using only strenuous and moderate physical activity categories:

- Strenuous activities, 3 times a week (9×3) = 27 units;
- Strenuous activities, 2 times a week ($9 \times 2 = 18$) + Moderate activities, 2 times a week ($5 \times 2 = 10$) = 28 units;
- Strenuous activities, 1 time a week ($9 \times 1 = 9$) + Moderate activities, 3 times a week ($5 \times 3 = 15$) = 24 units;
- Moderate activities, 5 times a week (5×5) = 25 units.

B) Examples of ways to obtain the level between 14 and 23 units using only strenuous and moderate physical activity categories:

- Strenuous activities, 2 times a week (9×2) = 18 units;
- Strenuous activities, 1 time a week ($9 \times 1 = 9$) + Moderate activities, 1 time a week ($5 \times 1 = 5$) = 14 units;
- Moderate activities, 3 times a week (5×3) = 15 units.

In the original version, the duration of exercise sessions was expressed as “*more than 15 minutes*”. I cannot ascertain that using another duration reference (e.g., 20 minutes, 30 minutes, etc.) would affect its validity. However, this is unlikely given that this dimension is not taken into consideration in the computing of the final score. This is nonetheless one of the limitations of the questionnaire.

Conclusion

The questionnaire has been translated in different languages and used to assess leisure-time physical activity among different populations, in different countries and during different seasons. As such, the examples of physical activities listed in the questionnaire can be adapted to these situations as long as the new activities belong to the correct MET categories.

As a final note, I would say that this first task that I undertook as a graduate student under the direction of Dr. Roy J. Shephard ended as being a very significant scientific contribution even 30 years later.

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THE GODIN-SHEPHARD LEISURE-TIME PHYSICAL ACTIVITY QUESTIONNAIRE

Qualifications

The author's qualifications are as follows: Gaston Godin Ph.D.



U.S. Department of Health and Human Services (USDHHS, 1999). Achieving a moderately active lifestyle, in: U.S.D.H.H.S., Public Health Service, Center for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition and Physical Activity (Eds.), *Promoting physical activity: A guide for community action*. Human Kinetics, Champaign, IL. pp. 15-37.

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