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A brief measure to predict exercise behavior: the Archer-Garcia Ratio

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Abstract

Background: Different forms of conscious and planned physical exercise and activity that individuals perform improve not only physical but also psychological health, well-being, and both physical and intellectual performance. Here we put forward and test the predictive validity of the Archer-Garcia Ratio, a brief measure for exercise frequency computed using participants' responses to two questions.

Method: The participants ($N = 158$) were recruited from a training facility in the south of Sweden. The Archer-Garcia Ratio was constructed by standardizing (i.e., z-scores) and then summarizing individuals' responses to two questions: "How often do you exercise?" (1 = *never*, 5 = *5 times/week or more*) and "Estimate the level of effort when you exercise" (1 = *none or very low*, 10 = *very high*). Participants responded also to the Godin Leisure-Time Exercise Questionnaire and allowed the collection of electronic data to track the number of times they had trained six months before and both six and twelve months after the survey.

Results: The Archer-Garcia Ratio predicted, moderately, how often individuals had trained during the six months before and both six months and twelve months after the survey.

Conclusion: The Archer-Garcia Ratio is a brief and valid self-report measure that can be used to predict actual retrospective and prospective exercise behavior. It offers a simple and straightforward form to estimate adherence, compliance and propensities of peoples' exercise habits.

Keywords: Medicine, Clinical psychology, Psychology

1. Introduction

The estimation of physical exercise adherence, compliance, and propensity is measurable through various automated, non-automated, and self-report instruments (e.g., accelerometer-based activity performance adherence). These measures are used to assess the health-promoting effects of physical activity interventions (Evenson et al., 2015). This line of research has shown that individuals who adhere to different forms of conscious and planned physical exercise do not only improve their physical health and performance, but also psychological health, well-being, and intellectual performance (Archer and Garcia, 2014; Garcia et al., 2012). Among the elderly, for example, regular physical exercise with sufficient degree of physical effort and energy expenditure, serve as a proactive and prevention buffer against symptoms and biomarkers for several neurodegenerative and psychiatric disorders (Archer, 2012; Archer and Kostrzewa, 2015; Archer and Kostrzewa, 2016; Archer et al., 2014; Garcia and Archer, 2014).

There remains a lack of short, 'easy-to-apply', and valid self-rated measures of physical activity (Al Sayah et al., 2016; Dinh et al., 2016; Fitzgerald et al., 2015; Giggins et al., 2016; Kraal et al., 2014; Piotrowicz et al., 2015; Rathleff et al., 2015). We developed two questions, that combined we call the Archer-Garcia Ratio, to capture information pertaining to individuals' propensity, compliance, and persistence to maintain regular physical exercise, as well as effort level. These two simple items allow respondents to express an estimation of the frequency and intensity of their exercise or physical activity. These two questions have been shown to be related to the experience of high levels of positive affect, low levels of negative affect (e.g., Garcia and Archer, 2016) and high academic performance (e.g., Garcia et al., 2015). However, the validity of the Archer-Garcia Ratio's predictive value in relation to actual behaviour has not been tested. In previous studies, it has only been assumed that self-reported frequency and intensity of physical exercise is positivity related to actual exercise behaviour.

Hence, in the present study, we address the concurrent validity of the Archer-Garcia Ratio by comparing the Ratio's predictive value with those of another already well-established reliable and valid measure for exercise behaviour, namely, the Godin-Shepard Leisure-Time Physical Activity Questionnaire. This is an instrument that is often applied as a screening tool to provide estimations of weekly exercise exertion, it assesses strenuous intensity exercise involvement, and it has