Physical Self-Efficacy and Perceived Incremental Force Exertion Accuracy Following 3-, 6-, or 12-Week Strength and Conditioning Course

Samantha S. Dardaman, M.S., CSCS, RSCC,
K. N. Hayden, H. P. Williams, & S. B. Martin
University of North Texas, Denton, TX

Introduction

Self-efficacy has been identified as an influential component of physical abilities[1]. However, less is known regarding its role in psychophysical performance of force exertion. Although the use of perceived exertion, a psychophysiological method of measuring force, is commonly used in resistance training and physical rehabilitation, more research is needed to assess the accuracy of subjective judgement of physical performance [2-4].

Purpose

This study aims to determine the accuracy of perceived force exertion at submaximal increments following participation in a 3-week, 6-week, and 12-week strength and conditioning (S & C) course, as well as examine the influence that education and physical self-efficacy may have on force exertion accuracy.

Methods

- 49 participants (age 22 ± 4.9 years), conveniently sampled from an undergraduate S & C course
- Course included education and training of strength and conditioning principles and practices
- Data collection completed prior to and following 3-, 6-, or 12-week S & C course
- Incremental force exertion measurement via hand-grip dynamometer at 100%, 25%, 50%, 75% of perceived effort
- Measures of physical self-efficacy collected pre- and post- course

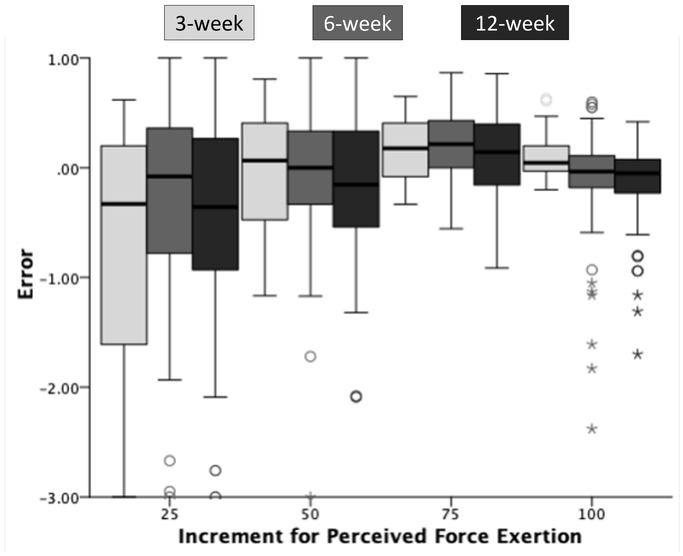
COLLEGE OF EDUCATION
Department of Kinesiology,
Health Promotion & Recreation

Strength and conditioning training increases **CONFIDENCE** in kinesthesis, but not accuracy.

Scan to download the full abstract & poster

Results

Correlation analyses indicate a positive linear relationship between physical self-efficacy and perceived force exertion accuracy (r = 0.773, p = 0.003). A linear regression analysis was also conducted to determine there is no difference in force exertion accuracy amongst participants of 3-, 6-, or 12-week training groups (r^2 = 0.046, p < 0.001).



Discussion

Strength and conditioning education may be utilized to increase physical self-efficacy, regardless of training exposure time. However, because this relationship does not influence accuracy in incremental perceived force exertion, further training regarding psychophysical feedback may be required.

Practical Application

Trainers, coaches, and practitioners using perceived exertion in practice may yield inconsistent force production results, regardless of educational and psychophysical interventions.

References

1. Brannagan, K. (2010). The role of exercise self-efficacy, perceived exertion, event-related stress, and demographic factors in predicting physical activity among college freshmen. *Health Education Journal, 70*(4), 365-373.
2. Buckworth, J., Dishman, R. K., O'Connor, P. J., & Tomporowski, P. D. (2013). *Exercise psychology* (2nd ed.). Human Kinetics.
3. Hutchinson, J. C. (2021). Perceived effort and exertion. In Z. Zenko & L. Jones (Eds.), *Essentials of exercise and sport psychology: An open access textbook* (pp. 294– 315). Society for Transparency, Openness, and Replication in Kinesiology.
4. Tenenbaum, G., & Eklund, R. C. (2012). Measurement *in sport and exercise psychology*. Human Kinetics.