PREDICTION EQUATIONS OF 1-RM: VALIDITY IN FITNESS PROGRAM

Lacio, M. [1]; Damasceno, V.[1] ; Vianna, J.[2,3] ; Lima, J. [2,3]; Filho, J. [2,3] ; Conceição, A. [4,5]; Brito, J. [4,5]

[1]Laboratory of Human Motricity Biosciences- LABIMH - University of Castelo Branco, Rio de Janeiro, Brasil
[2]Laboratory of Motor Assessment / University Federal de Juiz de Fora
[3]Faculty of Physical Education – Universidade Federal de Juiz de Fora / MG
[4]Sports Sciences Research Laboratory, Sports Sciences School of Rio Maior, Polytechnic Institute of Santarém, Portugal
[5]Research Center for Sport, Health and Human Development (CIDESD), UTAD, Vila Real, Portugal

E-mail: jbrito@esdrm.pt
Presentation: Poster Presentation
Presenting author: Ana Conceição

Purpose: The most popular method to determine the workload in the strength training is the one repetition maximum test (1-RM), which consist of the maximum load that can be lifted at once in a complete full range movement.
The purpose of this study was to determine the validity of the 1-RM prediction equations proposed by Adams (1994), Baechle(2000), Brzycki(1993) for strength assessment in fitness program.
Methods: Thirty one healthy male subjects (mean ± SD: age of 21.8 ± 4.0 years, weight 75.9 ± 8.4 kg and height 178.1 ± 6.4 cm) performed two tests on the bench press exercise: (a) maximum test - determination of the 1-RM load and; (b) submaximum test - determination of the load correspondent to 4 to 10 maximum repetitions.
Results: The analysis of variance (ANOVA) found no significant difference ($p>0.05$) between maximum load determinate through prediction equations or through the 1-RM test. The coefficient of determination (r^2) ranged from 0,91 to 0,94, and the prediction equations had small standard error of estimative (2.7 to 3.2 kg).
The results indicate that the 1-RM prediction equations could be used to determine the maximum load at the bench press exercise of subjects with low strength training experience.

Keywords: strength training, 1-RM prediction, strength training experience

References

Adams GM. **Exercise physiology: laboratory manual**. 2ª ed. Dubuque, Iowa: Brown & Benchmark Publishers, 1994.
Baechle TR, Groves, BR. Treinamento de força: passos para o sucesso. 2ª ed. Porto Alegre: Artmed, 2000.
Brzycki H. Strength testing: predicting a one-rep max from reps-to-fadigue. **JOHPERD** 64:88-90, 1993.