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Relationship between Subjective sensation and Maximum voluntary contraction

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Introduction. The purpose of this study was to examine neuromuscular activation and ratings of perceived exertion (RPE) at 20%, 40%, 60%, 80% quadricep of the maximum voluntary contraction (MVC) in healthy males and females.

Methods. Subjects for this study included 20 healthy, college-aged male (n=10) and female (n=10) volunteers. Subjects were 10 males, mean age = 20.2 ± 0.6 years, mean height = 170.5 ± 4.5 cm, mean weight = 60.4 ± 7.2 Kg, BMI = 20.8, and were 10 females, mean age = 19.6 ± 0.7 years, mean height = 156.5 ± 4.7 cm, mean weight = 49.0 ± 3.3 Kg, BMI = 20.1. All subjects were free of orthopedic, cardiopulmonary, systemic and neurological disease. Subjects were evaluated for their one-repetition maximum (1-RM) during inertial knee extension exercise. Perceived exertion was measured by asking subjects to provide a number that corresponded to the feelings in their quadriceps after completion of the three repetitions, by viewing a modified category-ratio scale (CR-10). Relationship between CR-10 and MVC in Isometric contraction of knee extensors and during Isokinetic contraction of knee extensions was examined.

Results. Relationship between Subjective sensation and MVC demonstrated at Isometric and Isokinetic showed an exponential increase, except female's Isometric. Relationship between RPE (CR-10) felt when the provided targeted value and MVC showed involution function.

Conclusion. These results obtained in this study indicate that RPE (CR-10) is a good monitor of estimation intensity of Isometric contraction and Isokinetic contraction. It is thought that Subjective sensation and RPE suggest to use effectively as a strength index of muscle training.