TACSM Abstract

The Effects of Music on Muscle Fatigue and Strength in Individuals with Previous Knee Injuries

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ABSTRACT

Music can be used during physical activity for a variety of ergogenic, psychological, and psychophysical benefits. Listening to one's preferred genre of music has been found to optimize arousal and increase motivation during an exercise bout that can lead to performance improvements. Rehabilitation patients often struggle to adhere to their rehabilitation for a variety of reasons, including lack of enjoyment, lack of progress, or even increased pain or fatigue. Therefore, incorporating music into a rehabilitation setting could help patients improve their strength and reduce fatigue, thus improving rehabilitation adherence. **PURPOSE:** To examine the effects of music preference on muscle fatigue and strength in individuals who suffered a previous knee injury. **METHODS:** Males (n = 14) and females (n = 10) between the ages of 18 and 55 (M = 23.21, SD = 6.77) who previously had an ACL, meniscus, PCL, MCL, or LCL injury (with or without surgical intervention) between one but no more than 13 years ago participated in this study. A randomized crossover design was used with each participant completing three days of testing (no music, preferred music, and non-preferred music as determined via a questionnaire at initial visit) with each session occurring at least 48 hours apart. During every session, participants first warmed up on a cycle ergometer at 50 watts for five minutes before undergoing a Thortensson fatigue test via the Biodex dynamometer. Measures of quadriceps strength and quadriceps fatigue were collected. During the two music conditions, music was played via a speaker throughout both the warm-up and Thortensson fatigue test. **RESULTS:** One-way repeated measures ANOVAs were conducted to assess for differences in quadriceps fatigue and strength across all three conditions. No significant differences were found across conditions in quadriceps fatigue ($F(2,46) = 0.682$, $p = 0.510$, $\eta_p^2 = 0.029$) or quadriceps strength ($F(2,46) = 1.447$, $p = 0.246$, $\eta_p^2 = 0.059$). **CONCLUSION:** There was no difference in muscular fatigue or strength between the three conditions. Therefore, listening to one's preferred music may not improve strength or reduce fatigue in a rehabilitation setting. Rehabilitation practitioners should consider that music may not be the most effective strategy to increase muscular strength or reduce fatigue in a rehabilitation setting and should explore other techniques that could help address these variables and improve rehabilitation adherence.