The purpose of this study was to determine a functional fatigue protocol’s (FFP) effect on oxygen consumption (VO2), heart rate (HR), ratings of perceived exertion (RPE), and circuit time (CT). Eighteen recreationally active volunteers (mean age = 21.50 ± 2.12 years, height = 173.43 ± 7.98 cm, and weight 75.68 ± 13.04 kg) participated in this investigation. An initial visit to the Exercise Science Laboratory determined each participant’s VO2max (excluding anyone not within a fair range of conditioning) and familiarized subjects with the FFP. A minimum of 7 days rest between the VO2max test and the FFP test session was implemented to reduce the effects of DOMS on results. A VO2000 portable metabolic unit, designed to measure oxygen consumption during dynamic activities, was strapped to the subject’s back prior to beginning the FFP. A facemask was used to ensure efficient capture of all gasses during the completion of the FFP. A Polar Heart Rate Monitor was attached to the chest of each subject, thereby allowing heart rate collection before and after each trial of the FFP. The Borg Rating of Perceived Exertion Scale determined subject’s difficulty perception after each fatigue trial. The FFP consisted of a modified agility course with maximal runs incorporating forwards and backwards sprinting, lateral shuffling and rapid cutting maneuvers on a wooden floor. Ten trials comprised each set of the FFP, with each subject completing a total of four sets of the exercise regimen. A 2-3 minute rest period ensued each set to allow for resetting the VO2000. Each trial was timed on a standard stopwatch, with results given to the subject after each trial. A repeated measures multivariate ANOVA (p<0.05) revealed significant differences for VO2 (p = 0.0032), RPE (p = 0.0026) and CT (p = 0.0002). Pairwise t-tests revealed significant differences between sets 1 (VO2 = 36.81 ± 6.56 ml/kg/min, RPE = 15.33 ± 3.21, CT = 19.15 ± 2.00 s) and 2 (VO2 = 35.19 ± 6.81, RPE = 16.89 ± 3.12, CT = 19.87 ± 2.26 s) and sets 2 and 3 (VO2 = 33.34 ± 7.17, RPE 17.72 ± 7.17, CT = 20.22 ± 2.11). No significant differences were observed between sets 3 and 4 for any variables except RPE (18.39 ± 1.61). These results suggest that this FFP does induce physiological fatigue, increased perceptions of fatigue and subsequent decline in performance over time. Consequently, this study provides evidence for using a FFP in future research to examine why athletic injuries occur in the latter part of athletic competition.

**Keywords:** functional fatigue, oxygen uptake, rating of perceived exertion