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Title: Acute Upper-Body and Lower-Body Neuromuscular Fatigue Effect on Baseball Pitchers' Velocity: A Pilot Study.

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Abstract: The purpose of this pilot study was to explore the acute effect of upper-body and lower-body neuromuscular fatigue protocols on baseball pitchers' velocity. Sixteen baseball pitchers were recruited, and a crossover design was used to meet the study purpose. Pitchers were tested twice, 7 days apart, with their upper-body and lower-body explosiveness, pitching velocity, and muscle soreness perception of their throwing arm (forearm flexors, biceps, anterior deltoid, and upper trapezius muscles) assessed before and after an upper-body and lower-body neuromuscular fatigue protocol. Two-way analysis of variances and paired t tests ($p < 0.05$) were used to identify and compare prescores and postscores. Following both fatigue protocols, results revealed a significant decrease in time for pitching velocity ($p = 0.005$, $\eta^2 = 0.462$), and increases in muscle soreness perception of the forearm flexors ($p = 0.005$, $\eta^2 = 0.470$), anterior deltoid ($p = 0.045$, $\eta^2 = 0.274$), and upper trapezius ($p = 0.023$, $\eta^2 = 0.339$) muscles. Paired t test results showed a significant decrease in preneuromuscular and postneuromuscular fatigue protocol in the upper-body ($p < 0.01$) and lower-body ($p < 0.01$) explosiveness scores. These pilot study results show the impact of different exercise protocols on pitchers' explosiveness, velocity, and muscle soreness perception emphasizing the need for further investigation into the acute effect of exercise targeting the upper or lower-body on pitching performance, specifically at the pitcher's position.

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