



Washington State University

College of Education, Sport and Human Sciences

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Will defend the Thesis on

Date: April 21, 2026

Time: 12:30 P.M.

Pullman Campus: Smith Gym, Room 201

Faculty, students and the general public are encouraged to attend

Title:

GRIPPING EXERCISE IMPROVES BASS DRUM PERFORMANCE IN COLLEGIATE BASS DRUMMERS

Chair: Tristan Loria

Percussion performance requires precise temporal control, particularly in marching band settings. Although pre-performance routines (PPRs) are commonly used in sport, their role in percussion performance remains underexplored. This study examined whether acute grip exercise could influence immediate bass drum timing and movement kinematics. Twelve members of the Washington State University marching band drumline completed three conditions in a counterbalanced repeated-measures design: a beat-coupled concentric grip condition, a sustained isometric grip condition, and a resting control condition. Immediately after each condition, participants performed a standardized bass drum excerpt. Timing outcomes were derived from recorded audio, exploratory kinematic measures were obtained from motion capture, and post-condition surveys assessed participants' perceptions of the exercises. The concentric grip condition produced lower temporal error and lower temporal variability than the resting control condition. Both exercise conditions were perceived as more effortful than control, while the concentric condition was rated as more engaging and more favorable overall than control. Interest in implementing the concentric condition over four weeks was also greater than for isometric. In contrast, exploratory kinematic analyses revealed no significant condition effects. These findings suggest that a brief, rhythmically structured grip PPR may improve immediate performance in bass drummers.