

Resisting Arrest: Analysis of Different Prone Body Positions on Time to Stand and Engage

KRISSY SANCHEZ¹, J. JAY DAWES², MARK D. STEPHENSON^{3,4}, ROBIN M. ORR⁴ & ROBERT G. LOCKIE¹

¹Center for Sport Performance; Kinesiology; California State University, Fullerton; Fullerton, CA

²Tactical Fitness and Nutrition Lab; School of Kinesiology, Applied Health and Recreation; Oklahoma State University, Stillwater, OK, USA.

³Center for Sports Performance and Research, Mass General Brigham, Foxborough, MA

⁴Tactical Research Unit; Bond University; Robina, Qld, Australia.

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Advisor / Mentor: Lockie, Robert (rlockie@fullerton.edu)

ABSTRACT

An isolated police officer executing an arrest can be placed in a dangerous situation should the detainee become non-compliant. Further research is needed to ascertain the position that a detainee can be placed in that takes the longest time for them to rise from the ground, as this can influence the officer's reaction time to a life-threatening situation. **PURPOSE:** Determine differences between participants' time from four prone positions to a standing athletic position which would then prepare the participant to engage or run from the officer, similar to what could be seen during an interaction between police and detainees. **METHODS:** Twenty-four college-aged participants were recruited for this study; 9 participants were female and 15 were male. The following prone positions were examined in one session: prone position with hands hidden under the chest (PHC); prone position with arms perpendicular to the torso and palms of the hand facing up (PPU); prone position with arms perpendicular to the torso, palms of the hand facing up, with ankles crossed on the ground (PPUAC); and prone position with arms perpendicular to the torso, palms of the hand facing up, with ankles crossed but elevated toward the lower back (PACKB). The order of these positions was randomized amongst participants. Participants were instructed to rise to an athletic stance from each of these positions as quickly as possible, which was recorded by a video camera. Time was calculated via a frame-by-frame analysis using motion analysis software from movement initiation in the prone position until participants were standing in the athletic position. A 2 (sex) x 4 (position) repeated measures ANOVA with Bonferroni post hoc calculated between-position differences. **RESULTS:** There was a significant interaction for position ($p=.003$) but not sex ($p=.415$). The PACKB position was significantly slower than the PHC and PPUAC positions ($p\leq 0.045$) and had the slowest time to reach a standing position (~2.041 s). **CONCLUSION:** Previous data has indicated the average time for an officer to draw their weapon is 1.5 s. In this study participants were able to rise from the four prone position variations to an athletic position in ~2 s or less. As reaction time could influence an officer's safety, the PPUAC position seems to require the most time for a detainee to stand and engage an officer.