Review of: "Preventing a loss of accuracy of the tennis serve under pressure"

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Beckmann et al. conducted an interesting study on how left hand dynamic handgrip helps with choking under pressure in tennis serves. In the study, researchers measured 20 right-handed skilled junior athletes' tennis serve performance, first without pressure and then under pressure. Athletes conducted left or right handgrip before the pressured serve, revealing that left hand dynamic handgrip, but not right hand dynamic handgrip, could effectively maintain tennis serve performance under pressure. The result aligns with the effectiveness of left hand dynamic handgrip found in other sports (e.g., football penalty shooting), supporting the involvement of left hemisphere activation in cognitive control.

One additional variable that could be worth looking at is handedness strength. Some previous studies using Edinburgh Handedness Inventory [1] [2] [3] have calculated the handedness strength (mixed vs. extreme) in addition to the handedness direction (left vs. right). Mixed-handed people are those who occasionally use their non-dominant hands (scoring between -80 to 80 on the Edinburgh Handedness Inventory), while extreme-handed people are those who always use their dominant hands (scoring between -100 to -80 or 80 to 100). Mixed right-handed people were shown to have more neural signal transmission between left and right hemispheres via corpus collosum compared to extreme right-handed people [4] [5]. I suggest looking at handedness strength because this difference in interhemispheric interaction could influence the effectiveness of left hand grasp within the right-handed athletes' group, particularly given that tennis serve behavior heavily relies on the left hemisphere.

Another group that would be interesting to look at is left-handed tennis players. I wonder if the left hand dynamic handgrip could be incorporated as a general routine for all tennis players or just for right-handed ones. Although left-handed people were shown to struggle living in the right-handed world [6] [7] [8], left-handed athletes were shown having advantages in playing many sports [9] [10]. I am not an expert in this particular field, but I wonder if left-handed tennis players should switch to a right hand dynamic handgrip strategy to prevent choking under pressure. In addition, a previous study [3] suggests that extreme left- and right-handed people's performance were less influenced by the laterality of stimuli than were mixed left- and right-handed people, so the effectiveness of dynamic handgrip may also differ among left-handed athletes with different handedness strength. And of course, the test would require larger sample size.

In terms of the pressure or stress level, I wonder if there is a criterion for a stress level that could lead to choking. The relationship between stress and performances is curvilinear, with certain levels of stress being related to improvement of performance [11] [12]. To ensure the stress level induced by the pressure setting impairs athletes' performance, it might be worth measuring stress-related responses at different stages of the task. Measuring stress level at different stages can help researchers pinpoint at which time window the handgrip strategy would be most effective in preventing choking.

Overall, this is an interesting paper, and it would be great if the dynamic handgrip strategy could help many athletes, especially as we observed many athletes "choking" in big events like the past Olympic season.

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