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Human Kinetics
LETTER TO THE EDITOR

A comment on the statistical analyses and purported effects in Mohr et al

Dear Editor,

I read with great interest the article by Mohr et al,[1] a novel study on the longitudinal effects of combining foam rolling (FR) with static stretching (SS) on hip-flexion range of motion. There were, however, a number of concerns, especially regarding the statistical analyses and purported effects. First, despite claiming an effect for the FR-only group, the 95% confidence interval of said group's difference from baseline includes zero. Because the alpha was set to $P \leq .05$, or 5%, there does not appear to be evidence to support the conclusion that the observed increased flexion range of motion in the FR group was not due to chance alone.[2]

The reported effect sizes, although allegedly calculated using Cohen *d*,[3] could not be replicated. The authors also did not compare all experimental outcomes with the control group. Therefore, I have recalculated Cohen *d* ($d = [m_1 - m_2]/SD_{pooled}$, where SD = SE × the square root of n and SE is the standard error reported by Mohr et al), in addition to *P* values (using an independent *t*-test), relative to the control group (Table 1).

The authors claimed that both SS and FR underwent a significant change despite neither group having reached statistical significance when compared with the control. Moreover, although the changes from baseline in SS appear to be due to the treatment, these observed effects were not statistically different from the control ($p = .08$), but the authors did not note this. However, the authors did note that there were no significant differences between any of the other treatments (presumably FR- and SS-only groups), but because the control group is not a treatment group, it cannot be inferred that it was included in these comparisons. Furthermore, the effect sizes presented could not be replicated, and the true effect sizes appear to be much lower than those presented by Mohr et al.[1]

Finally, the pretreatment measurements were taken before the first intervention, and the posttreatment measurements were taken directly after final intervention. Therefore, it should be noted that it cannot be concluded that the observed effects are due to chronic changes alone, as the acute effects from the final intervention may be contributing to the measured posttreatment changes in hip-flexion range of motion.

Notwithstanding the aforementioned issues, I still believe the work by Mohr et al[1] is of importance, as it describes the large, statistically significant, and clinically meaningful effects of combining SS with FR.

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References

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2. Gardner MJ, Altman DG. Confidence intervals rather than *P* values: estimation rather than hypothesis testing. *Br Med J (Clin Res Ed).* 1986;292(6522):746–750.
3. Cohen J. *Statistical Power Analysis for the Behavioral Sciences.* Routledge Academic; 1988.

Table 1 Recalculation of Effect Sizes and *P* Values Compared With Control.

	SS	SS + FR	FR	Control
Mean ± SD (°)	12.26 ± 13.31	23.55 ± 11.16	6.88 ± 12.55	3.74 ± 5.72
Cohen *d*	0.83 (–0.10, 1.73)	2.23 (1.08, 3.35)	0.32 (–0.56, 1.20)	
P	.08	<.01	.48	

Abbreviations: SS, static stretching; FR, foam rolling.