

Validity of Vertical Jump Measuring Devices

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ABSTRACT

The vertical jump has been used to assess athleticism in explosive sports. Field measuring methods have been recently introduced to the market. Some of these devices have been previously validated, however, they have not been validated by an independent research institute nor have been concurrently validated in the same training session. **PURPOSE:** This research intends to conduct an independent validation of alternative vertical jump devices and to validate multiple devices within the same training session. **METHODS:** 50 physically active University students were recruited for this study. The subjects performed a self-paced 5 minute jog on a treadmill as part of the general warm-up followed by an 8 minute specific dynamic warm up. Subjects then performed a familiarization phase on the force plates, which consisted of 3 repetitions of the countermovement jump (CMJ); in order to control for individual technical differences and intra-subject variability, subjects were instructed to perform a CMJ at a 90 degree angle squat for each repetition. Subjects then performed a CMJ at the researchers signal for 3 repetitions. We placed an accelerometer based device (Push-Band) on the subjects waist, an Iphone 7plus was used to record and analyze the subject's CMJ on two video apps (MyJump2 and What'sMyVert), and a photoelectric cells system (optojump) bars were placed next to the force plates; the later were used as the gold standard for the vertical jump measure. 3 researchers measured synchronically each CMJ. A data analysis was conducted on IBM SPSS 23. An Intra-class correlation was used to analyze the correlation between devices. **RESULTS:** Compared to the force plates, the MyJump2 app showed a nearly perfect correlation ($r=.968$). The Whats'myVert video app and PushBand showed a moderate-large correlation ($r=.619$ and $r=.641$ respectively). Lastly, the Optojump showed a moderate correlation of $r=.492$. **CONCLUSION:** We observed a nearly perfect correlation of the MyJump2 app, this correlation appears to be consistent to a previous validation study. The What'sMyVert app showed a large correlation to the force plates, and to our knowledge, this is the first study looking at the validation of this app. We found some inconsistency between our data from the PushBand accelerometer and the Optojump to what has been previously published. In summary, based on our data, the video apps appear to be an excellent alternative to costly laboratory and field devices.