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Using budget-friendly methods to analyze sport specific movements LINDSAY JACKSON, SARAH WILLIAMS, DAVON FERRARA, Belmont University — When breaking down the physics behind sport specific movements, athletes, usually professional, are often assessed in multimillion-dollar laboratories and facilities. Budget-friendly methods, such as video analysis using low-cost cameras, iPhone sensors, or inexpensive force sensors can make this process more accessible to amateur athletes, which in-turn can give insight into injury mechanisms. Here we present a comparison of two methods of determining the forces experienced by a cheerleader during co-education stunting and soccer goalies while side-diving. For the cheerleader, accelerometer measurements were taken by an iPhone 5 and compared to video analysis. The measurements done on the soccer players were taken using FlexiForce force sensors and again compared to video analysis. While these budget-friendly methods could use some refining, they show promise for producing usable measurements for possibly increasing our understanding of injury in amateur players. Furthermore, low-cost physics experiments with sports can foster an active learning environment for students with minimum physics and mathematical background.

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