Vertical Jump Height Prediction with Upper-limb Counter-movement, Pre-jump Knee-Flexion and Approaching Distance in Volleyball Players

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Objective/Background

- *Investigate the relationship between Arm Swing Angle, Knee Angle and Approaching Distance during Vertical Jump*
- *Provide Scientific Way to evaluate Jump performance*
- *Enhance the Performance of Volleyball Players*

Methodology

- *Experiment is held in the Polytechnic University*
- *20 Subjects are recruited aged from 18 to 45*
- *Measure the Jump Height with Vertical Jump meter*
- *Obtain Joint Angles by using Naraxon (16 Sensors)*
- *Use Force Plate to receive Force Response*
- *Use MATLAB and Least-Square Regression to find out the Relationship between predictors and Vertical Jump Height*

Results/ Application

- *Force contribute the more in Vertical Jump*
- *Increase Right Knee Angle, Right Shoulder Angle, Right Shoulder Angular Velocity, and Upper Limb Length can provide a higher Vertical Jump Height*
- *Sensors to monitor and improve Right Shoulder Angle Velocity is more controllable in Real Sport Situation*

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