Implementation of Weightlifting Barbell Kinematics Analysis Software

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Abstract. Background: In this research, we propose an application utilizing video analyze technology, which designed for weightlifting barbell trajectory kinematic analyses. Instead of commercial apps nowadays, like Siliconcoach, the one we proposed can work more completely. **Method:** Phase plays an important role in weightlifting barbell trajectory kinematic analyses. Accordingly, we take the phase of Snatch and Clean&Jerk, meanwhile using information of barbell in Spatial domain to form quantitative indicators. Concerning the information management, building athletes' database makes analysis and comparison of kinematic parameter far more convenient. **Finding:** Consider of the different OS in users, we adopt Open source framework – QT to a development platform, C/C++ as the program language and Open source – OpenCV for video and image processing algorithms. The complete system is now applied for weightlifting analysis and promotes working efficiency for researchers. **Discussion:** In order to meet all needs for different sports, traditional analytic software takes longer time for researchers because of the complicated process to operate on weightlifting, thus decrease their willing to use. The most crucial is that this system shows the Phase weightlifting kinematic analysis depends on, will efficiently enhance the analytic accuracy. This study is sponsored by Ministry of Science and Technology, R.O.C, project number：107-WFA- 9610-151-02。