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Time-Dependent Kinematics of Complex Human Structures SAAMI J. SHAIBANI, Independent Modeling, Algorithms & Analytical Studies (IMAAS) — The human body can be arranged in numerous geometrical configurations, including many interesting scenarios from the sport of gymnastics. One particularly challenging analytical example among these is the forward flip with maximum separation from the ground at the apex of the flight. The temporal aspects of this move involve the evaluation of multiple different positions during the trajectory, which adds significantly to the effort required. When a forward flip was executed during a football game [1], ready access to the recording [2] of this allowed a detailed kinematic examination to be performed. Careful application of highly intricate protocols [3] produces results which are consistent with similar athletic environments. The emphasis in this research is to transcend standard approaches elsewhere, which are severely limited to generic athletes and/or generic circumstances. Pedagogical benefits of the rigorous methodology adopted here are explored beyond what was introduced in a recent related study [4].

[1] Cardinals at Bengals on 24/12/2011
[2] via popular video-sharing website
[3] OUEL reports 1426/82 & 1427/82, 1982
[4] http://aapt.org/AbstractSearch/FullAbstract.cfm?KeyID=20973, 2012.

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