

Biomechanics

Artistic Generic Level 1

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Lecturer / Examiner



1

Biomechanics Basic Principles



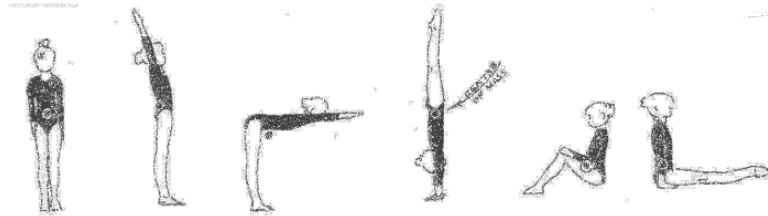
- Gravitational Force
 - Force the earth exerts on a body
 - Acts vertically downwards
 - Slows down a body as it rises
 - Accelerates a body as it falls

2

Biomechanics Basic Principles



- Centre of Mass
 - Formerly Centre of Gravity
 - Balance point of body mass
 - Position varies with body shape

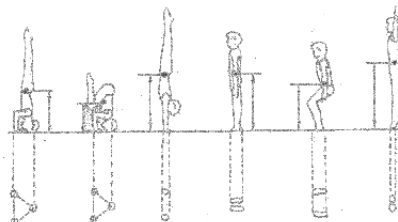


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Biomechanics Basic Principles



- Centre of Mass and Balance
 - C of M inside area of support base to remain on balance
 - Large support area easier balance
 - Closer C of M to base the more Stable the balance

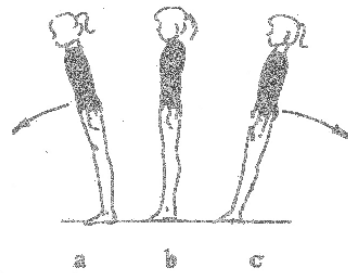


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Biomechanics Basic Principles



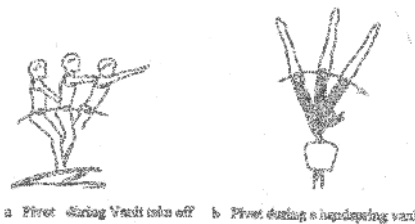
- Centre of Mass and Pivoting
 - On balance C of M inside Base
 - Off balance C of M outside base and body will pivot about base



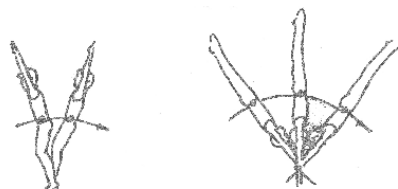
- a. off balance pivoting forwards
- b. on balance
- c. off balance pivoting backwards

Biomechanics Basic Principles

- Rotating (pivoting) about a fixed point
 - When in contact with an apparatus body pivots (rotates) about the point of contact



a Pivot during vault take off b Pivot during a handspring vault

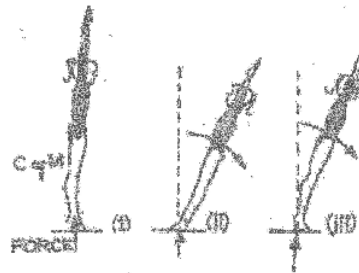


c Pivot during a back flip d. Pivot during a swing about a bar

Biomechanics Creating Rotation



- Can only be created when in contact with the apparatus
- Created by the application of a Force or Force
- Force vertical through C of M causes vertical movement only
- Force acting away from C of M causes rotation and Elevation



Biomechanics Rotation in Flight

- Rotation created from the apparatus will continue in flight but will rotate about C of M

