$$[1 - C/A]\cos^2\alpha = [1 - C/B]\cos^2\beta \quad (1)$$

The increase in θ from β to α as the twist angle ψ increases from 0 to 90° will be greatest when the arms are abducted (wide arms). Let the values A_0, B_0, C_0, α_0 and β_0 correspond to this body configuration. The decrease in θ from α to β as ψ increases from 90° to 180° will be smallest when the arms are adducted (touching the body). Let the values A_1, B_1, C_1, α_1 and β_1 correspond to this configuration. Suppose that during a half twist the arms are rapidly adducted at the quarter twist position so that $\alpha_1 = \alpha_0$ and then rapidly abducted again at the half twist position. Two applications of equation (1) show that the tilt angle increases from β_0 to β_1 such that:

$$\cos\beta_1 = k.\cos\beta_0$$

where:

$$k^2 = \frac{[1 - C_1/A_1][1 - C_0/B_0]}{[1 - C_1/B_1][1 - C_0/A_0]}$$

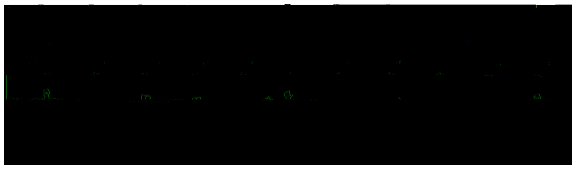

Figure 5: Simulation of a double-full-out straight.

to the full-out straight and double-full-out straight. These movements are used in dismounts from the gymnastics apparatus and in trampoline routines.

References

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