Abstract

Title: Difference of COM-COP Inclination Angle while Performing Ballet Turn (pirouette en dehors) in Novice and Experienced Dancers

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Pirouette, whole body rotation, is important in ballet. However, the learning process of pirouette is prolonged and easily leading to injury. Thus, the purpose of this study was to evaluate the difference between novice and experienced ballet dancers while performing pirouette in en dehors. Six female dancers participated, 4 dancers in the experienced group (E group; age: 21.3 ± 4.6 years; ballet experience: 12.3 ±1.9 years) and 2 dancers in the novice group (N group; age: 13.0 ± 0.0 years; ballet experience: 4.5 ± 3.5 years). There were five phases in pirouette, preparatory, double-leg support, single-leg support in pre-swing, single leg support in mid-swing, and ending phases. The experienced dancers had longer duration (E: 0.50 ± 0.08 s; N: 0.39± 0.06 s; p=.009) but smaller maximum center of mass (COM) – center of pressure (COP) inclination angle in pre-swing phase (E: 2.98 ± 3.80 °; N: 0.39± 0.06 °; p=.002). The experienced dancer also had less push-off force, normalized by body weight (BW) in double-leg support phase (E: 0.83 ± 0.20 BW; N: 1.18 ± 0.26 BW; p=.007). Thus, the proper force exertion and without hasty pattern are suggested to novice while performing pirouette in en dehors.

Figure 1: Five phases in pirouette with six certain time points (SL: supporting leg; GL: gesture leg)