Supplementary materials

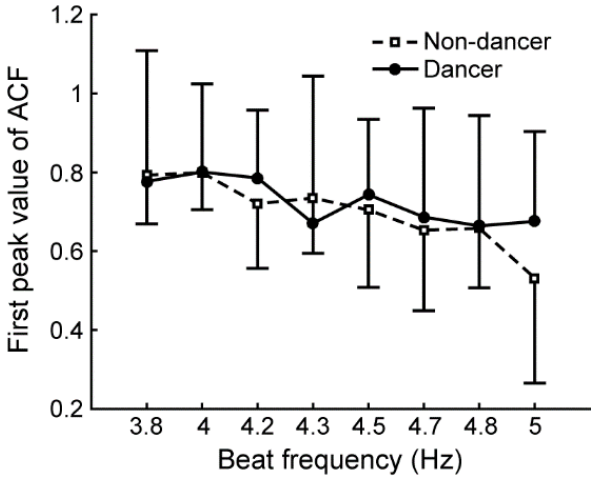

Fig. S1. The first peak value of the autocorrelation function (ACF). Group mean ±s.d. (*N*=10 for Non-dancers, *N*=7 for Dancers). In order to confirm the validity of the method for detecting movement frequency (i.e., time shift of the first peak value of the ACF), we calculated the first peak value of the ACF. A two-way ANOVA conducted on the first peak value of the ACF revealed no significant interaction between group and beat frequency, $F(3.263, 48.943) = 1.403$, $p = .252$, $\eta_p^2 = .086$. No significant main effect of group was found, $F(1, 15) = .075$, $p = .787$, $\eta_p^2 = .005$. This indicates that the spatio-temporal regularity of knee angular displacement did not differ between the groups, which supports the validity of the method for detecting movement frequency. There was a significant main effect of beat frequency, $F(3.263, 48.943) = 6.590$, $p = .001$, $\eta_p^2 = .305$.

		Consequent															
		M_1 ($\Delta freq$)			M_2 (f_{max})			Y (S.d. of φ)			Y (Range of φ)			Y (AMC rate limit)		
Antecedent		Coeff.	*SE*	*p*	Coeff.	*SE*	*p*		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*	Coeff.	*SE*	*p*
X (The extent of knee flexion)	a_1	0.010	0.003	0.014	a_2 0.023	0.011	0.053	c'	−0.210	0.518	0.692	c'	7.733	9.256	0.419	c' 0.024	0.016	0.159
M_1 ($\Delta freq$)		——	——	——	——	——	——	b_1	−103.752	34.869	0.011	b_1	−3073.791	622.823	< 0.001	b_1 1.667	1.080	0.147
M_2 (f_{max})		——	——	——	——	——	——	b_2	−7.117	10.720	0.518	b_2	−786.442	191.471	0.001	b_2 0.071	0.332	0.833
Constant	i_{M1}	−1.521	0.517	0.010	i_{M2} 1.329	1.680	0.442	i_Y	96.879	87.194	0.287	i_Y	2651.262	1557.441	0.113	i_Y 0.589	2.700	0.831
		$R^2 = 0.341$			$R^2 = 0.228$				$R^2 = 0.654$				$R^2 = 0.887$			$R^2 = 0.517$		
		$F(1, 15) = 7.759, p = 0.014$			$F(1, 15) = 4.421, p = 0.053$				$F(3, 13) = 8.188, p = 0.003$				$F(3, 13) = 34.145, p < 0.001$			$F(3, 13) = 4.633, p = 0.021$		

Table S1. Regression coefficients, standard errors, and model summary information for the mediation analyses. We conducted three separate mediation analyses, one for each performance variable (Y). Mediation analysis for the s.d. of φ and the range of φ, revealed a non-significant direct effect, and a significant indirect effect of the extent of knee flexion (X) on the performance variable (Y) through the mediator(s). Mediation analysis for the AMC rate limit, revealed neither significant direct nor indirect effects of the extent of knee flexion (X) on the performance variable (Y).