

Supplementary Table 1. Methods used to define the phases in each vertical jump.

Phase	Jump	Phase-Start	Phase-End
Weighing	CMJ	Initial Fz point	Point equivalent to Fz sampling frequency (one second) counting from the initial point (backwards in SJ and DJ)
	DJ	Final Fz point	
	SJ		
Unloading	CMJ	Alteration in weight \pm 5 SD	*Minimum (Min) Fz
Yielding Contact	CMJ	*Min-Fz	*Min-CoM velocity
	DJ	Weight > Maximum (Max) noise	
Braking	CMJ	*Min-CoM velocity	*CoM velocity > 0 m·s ⁻¹
	DJ		
Upward	CMJ	*CoM velocity > 0 m·s ⁻¹	Fz < Max-noise
Propulsion Phase 1 Propulsion Phase 2	DJ	Alteration in weight \pm 5 SD $\frac{1}{2}$ of total propulsion phase	$\frac{1}{2}$ of total propulsion phase
	SJ		Fz < Max-noise
Fligth	CMJ	Fz < Max-noise	Fz > Max-noise
	DJ		
	SJ		
Loading	CMJ	Fz > Max-noise	Peak landing Fz
	DJ		
	SJ		
Attenuation	CMJ	Peak landing Fz	Local Min-landing-Fz (i.e., the 1 st valley after peak landing Fz)
	DJ		
	SJ		
Control	CMJ	Local Min-landing-Fz	CoM velocity > 0 m·s ⁻¹
	DJ		
	SJ		

Countermovement Jump (CMJ); Drop jump (DJ); Squat jump (SJ); Standard deviation (SD); Center of mass (CoM);

*In the interval prior to the flight phase.

Supplementary Table 2. References used to calculate the biomechanical performance and injury-related metrics.

Category	References	Metric	Calculation	Unit	
Kinematics	(1-3)	JH-ToV	$ToV^2 / 19.62$	m	
		JH-CoM-D	Double integration method (see step 5)		
		JH-ToV + CoM-D	JH-ToV + CoM-D at takeoff		
		JH-FT	$(9.807 \cdot FT^2) / 8$		
	(4, 5)	CM-depth	Minimum CoM-depth preceding takeoff	m·s ⁻¹	
	(6)	Land-depth	CoM-D at initial contact - CoM-D at control-phase end		
	(7, 8)	Peak-V-Upw/Prop	Maximum velocity preceding takeoff		
	(5)	Peak-V-Dwn	Maximum downward velocity		
(9)	V-Peak-Pwr	Velocity at peak-power			
Kinetics	(7, 8, 10)	Mean-Fz-Upw/Prop	Mean-Fz during each phase interval	N	
		Mean-Fz-Brk			
		Mean-Fz-Load			
		Mean-Fz-Att			
		Mean-Fz-Cont	Peak-Fz during each phase interval		
		Mean-Fz-SJ1 and -SJ2			
		Peak-Fz-Upw/Prop			
		Peak -Fz-Brk			
	(6, 11)	Peak -Fz-Load	Fz at peak-power	N / m	
		Fz-Peak-Pwr			
		Amortization	Fz at control-end		
	(8, 9, 12)	Imp-Upw/Prop	Cumulative impulse during each phase interval	N · s	
		Imp-Brk			
Imp-Load					
Imp-Att					
Imp-Cont		Mean-Power during each phase interval			
Imp-SJ1 and -SJ2					
Mean-Pwr-Brk					
Mean-Pwr-Upw/Prop					
(6, 13)		Mean-Pwr-SJ1 and -SJ2	Peak-Power preceding takeoff		N / m
		Peak-Pwr-Upw/Prop			
	LL-Stiff	$(Brk-end-Fz - Brk-start-Fz) / Brk-time$			
Jump Strategy	(11, 14, 15)	T-Unl	Time of the previously described phases (Table 1)	s	
		T-Yld			
		T-Brk			
		T-Upw/Prop			
		T-Load			
		T-Att			
		T-Cont	(Fz at the end of each phase - Fz at the start of each phase) / phase-time		
		RFD-Unl			
		RFD-Yld			
		RFD-Brk			
	(4, 7, 16)	RFD-Peak	Time between the jump-start until reach: Peak-Fz (PF), Peak-Vel (PV), Peak-Pwr (PP), and takeoff (TO)	s	
		RFD-Load			
		RFD-Att			
		RFD-Cont			
		TT-PF			
		TT-PV			
(4, 7, 16)	TT-PP				
	TT-TO				

Jump height (JH); Takeoff velocity (ToV); Center of mass displacement (CoM-D); Flight time (FT); Countermovement (CM); Land (landing); Velocity (V); Upward (Upw); Propulsion (Prop); Downward (Dwn); Power (Pwr); Braking (Brk); Yielding (Yld); Loading (Load); Attenuation (Att); Control (Cont); Squat jump (SJ); Impulse (Imp); Stiffness (Stiff); Time (T); Rate of force development (RFD); Unloading (Unl); Time to (TT).

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