

Studies	Randomisation	Outcome	D1a	D1b	D2	D3	D4	D5	Overall
 _Lubans 2020	Clustered RCT	20 m shuttle run	+	+	+	+	+	+	+
Buquet 2010	Clustered RCT	YYIRT1	+	+	-	-	!	!	-
Harris 2021	Clustered RCT	20 m shuttle run	+	+	+	+	+	!	!
Harris 2022	Clustered RCT	20 m shuttle run	+	+	+	+	+	+	+
Ketelhut 2020	Clustered RCT	6 min run-z	!	+	!	+	-	!	-
Larsen 2017	Clustered RCT	YYIRT1	!	+	-	-	-	!	-
Ricci 2022	Clustered RCT	15m PACER	!	+	-	-	-	!	-
Takehara 2021	Clustered RCT	20 m shuttle run	+	+	+	+	+	+	+
Vizcaino 2021	Clustered RCT	20 m shuttle run	+	+	+	+	+	+	+
Wassenaar 2021	Clustered RCT	20 m shuttle run	+	+	+	+	+	+	+
Williams 2000	Clustered RCT	VO2peak	!	+	+	+	!	!	!
X4A_McNarry 2021	Clustered RCT	VO2peak	!	+	+	+	!	!	!
Angel 2021	Individual RCT	20 m shuttle run	+		!	+	-	!	-
Boddy 2010	Individual RCT	VO2peak	+		!	+	!	!	!
Bogataj 2021	Individual RCT	VO2peak	!		!	+	+	!	!
Cao 2022a	Individual RCT	VO2peak	!		+	+	+	!	!
Cao 2022b	Individual RCT	VO2peak	+		-	+	+	!	-
Chuensiri 2018	Individual RCT	VO2peak	!		!	+	!	!	!
Costigan 2015	Individual RCT	20 m shuttle run	+		!	+	+	+	!
Cvetkovic 2018	Individual RCT	YYIRT1	!		-	!	-	!	-
Engel 2019	Individual RCT	6 min run	!		!	+	-	!	-
Fernandez 2019	Individual RCT	20 m shuttle run	!		!	+	-	!	-
Gamelin 2009	Individual RCT	VO2peak	!		-	-	!	!	-
Lambrick 2016	Individual RCT	VO2peak	+		!	+	!	!	!
McManus 2005	Individual RCT	VO2peak	!		-	-	!	!	-
Mucci 2013	Individual RCT	VO2peak	!		-	-	!	!	-
Racil 2013	Individual RCT	VO2peak	!		!	+	!	!	!
Racil 2016a	Individual RCT	VO2peak	!		-	!	!	!	-
Racil 2016b	Individual RCT	VO2peak	!		!	+	!	!	!
Williams 2022	Individual RCT	20 m shuttle run	!		-	-	-	!	-

Fig 1. Risk of bias assessment for cardiorespiratory fitness. D1a, Randomisation process; D1b, Timing of identification or recruitment of participants; D2, Deviations from the intended interventions; D3, Missing outcome data; D4, Measurement of the outcome; D5, Selection of the reported result;  low risk;  some concerns;  high risk; RCT, randomised controlled trial; YYIRT1, Yo-Yo intermittent recovery test level 1; PACER, progressive aerobic cardiovascular endurance run.

Studies	Randomisation	Outcome	D1a	D1b	D2	D3	D4	D5	Overall
B2L_Lubans 2020	Cluster RCT	BMI-z	+	+	+	+	+	+	+
Baquet 2004	Cluster RCT	% body fat	!	+	-	-	!	!	-
Buquet 2010	Cluster RCT	% body fat	+	+	-	-	-	!	-
Harris 2021	Cluster RCT	% body fat	+	+	+	+	+	!	!
Takehara 2021	Cluster RCT	BMI	+	+	+	+	+	+	+
Vizcaino 2021	Cluster RCT	% body fat	+	+	+	+	+	+	+
X4A_Win 2019	Cluster RCT	BMI	!	+	+	+	-	!	-
Abassi 2021	Individual RCT	% body fat	!		-	!	!	!	-
Boddy 2010	Individual RCT	BMI	!		!	+	-	!	-
Cao 2022a	Individual RCT	BMI	+		+	+	+	!	!
Cao 2022b	Individual RCT	BMI	+		-	+	+	!	-
Chuensiri 2018	Individual RCT	% body fat	!		!	+	!	!	!
Costigan 2015	Individual RCT	BMI	+		!	+	+	!	!
Cvetkovic 2018	Individual RCT	% body fat	!		-	!	!	!	-
Engel 2019	Individual RCT	BMI	!		!	+	-	!	-
Fernandez 2019	Individual RCT	fat mass	!		!	+	!	!	!
Lambrick 2016	Individual RCT	% body fat	!		!	+	!	!	!
Nourry 2005	Individual RCT	% body fat	!		-	-	!	!	-
Popowczak 2022	Individual RCT	BMI	+		-	-	-	!	-
Racil 2013	Individual RCT	% body fat	!		!	+	!	!	!
Racil 2016a	Individual RCT	% body fat	!		-	!	!	!	-
Racil 2016b	Individual RCT	% body fat	!		!	+	!	!	!

Fig 2. Risk of bias assessment for body composition. D1a, Randomisation process; D1b, Timing of identification or recruitment of participants; D2, Deviations from the intended interventions; D3, Missing outcome data; D4, Measurement of the outcome; D5, Selection of the reported result; low risk; some concerns; high risk; RCT, randomised controlled trial; BMI (-z), body mass index (z score).

Studies	Randomisation	Outcome	D1a	D1b	D2	D3	D4	D5	Overall
B2L_Lubans 2020	Cluster RCT	standing long jump	+	+	+	+	+	+	+
Buquet 2004	Cluster RCT	hand-grip	!	+	-	-	-	!	-
Harris 2021	Cluster RCT	push-ups	+	+	+	+	+	!	!
Harris 2022	Cluster RCT	push-ups	+	+	+	+	+	+	+
Ricci 2022	Cluster RCT	push-ups	!	+	-	-	-	!	-
Vizcaino 2021	Cluster RCT	hand-grip	+	+	+	+	+	+	+
Angel 2021	Individual RCT	hand-grip	+		!	+	!	!	!
Bogataj 2021	Individual RCT	standing long jump	!		!	+	+	!	!
Chuensiri 2018	Individual RCT	Leg muscle strength	+			+	!	!	!
Costigan 2015	Individual RCT	standing long jump	+		!	+	+	+	!
Cvetkovic 2018	Individual RCT	counter movement jump	!		-	!	-	!	-
Engel 2019	Individual RCT	standing long jump	!		!	+	-	!	-
Racil 2016a	Individual RCT	counter movement jump	!		-	!	-	!	-

Fig 3. Risk of bias assessment for muscular fitness. D1a, Randomisation process; D1b, Timing of identification or recruitment of participants; D2, Deviations from the intended interventions; D3, Missing outcome data; D4, Measurement of the outcome; D5, Selection of the reported result; low risk; some concerns; high risk; RCT, randomised controlled trial.