Physical demands of tennis across the different court surfaces, performance levels, and sexes: a systematic review with meta-analysis

Sports Medicine

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Supplementary File 8. Complete overview of the quantitative synthesis (meta-analysis)

3.1 Duration of play

	Outcome (Description)	**Studies included in the meta-analysis**	**Number of studies** (n)	**Number of outcomes (n)**	**Effect size** (95%CI)	**Test for (Subgroup) Differences** (p value)	**95% PI** ┼	**I²** (%)	**Sensitivity analysis for ρ**	**Sensitivity analysis for imputed SDs** ┣
Match duration										
Male players	Match duration (min) (men/international hard + clay surfaces/best of 3)	Filipcic et al. (2021) Hoppe et al. (2014) Hornery et al. (2007) Mackie (2013)	7	8	M: 89.68 (78.96, 101.86)	0.696	(65.67, 122.48)	61.94	Very slight changes in the estimates of the means and standard errors.	M: 91.83 (78.99, 106.76)

	Mendez-Villanueva et al. (2007) Moreno-Perez et al. (2019) Stare et al. (2015) Yusoff and Krasilshchikov (2021)								
Match duration (min) (men/international hard surfaces/best of 3)	Filipcic et al. (2021) Hornery et al. (2007) Mackie (2013) Moreno-Perez et al. (2019) Stare et al. (2015)	5	5	M: 92.95‡ (73.11, 118.17)	NA	(52.86, 163.42)	88.10	Very slight changes in the estimates of the means and standard errors.	M: 96.48 (69.78, 133.41)
Match duration (min) (men/national hard + clay surfaces/best of 3)	Bergeron et al. (2007) Filipcic et al. (2021) Gallo-Salazar et al. (2019) Hoppe et al. (2014) Kilt and Arslan (2017) Perri et al. (2016) Ponzano et al. (2017) Stare et al. (2015) Torres-Luque et al. (2011)	9	13	M: 77.98 (69.16, 87.91)	0.876	(52.51, 115.80)	84.65	Very slight changes in the estimates of the means and standard errors.	M: 77.98 (69.16, 87.91)
Match duration (min) (men/national hard surfaces/best of 3)	Bergeron et al. (2007) Filipcic et al. (2021) Gallo-Salazar et al. (2019) Perri et al. (2016) Ponzano et al. (2017) Stare et al. (2015) Torres-Luque et al. (2011)	7	11	M: 76.62 (64.56, 90.93)	NA	(44.13, 133.02)	88.90	Very slight changes in the estimates of the means and standard errors.	M: 76.62 (64.56, 90.93)
Match duration (min) (men/national clay surfaces/best of 3)	Hoppe et al (2014) Kilt and Arslan (2017) Ponzano et al. (2017)	3	3	M: 78.55 (70.34, 87.72)	NA	(61.65, 100.09)	0	Very slight changes in the estimates of the means and standard errors.	NA

Female players	Match duration (min) (women/international all surfaces/best of 3)	Fernandez-Fernandez et al. (2007) Fernandez-Fernandez et al. (2008) Mackie (2013) Morante and Brotherhood (2005) Sánchez-Pay et al. (2021)	5	9	M: 87.95‡ (71.72, 107.85)	0.77	(50.02, 154.65)	80.34	Very slight changes in the estimates of the means and standard errors.	NA
	Match duration (min) (women/international hard surfaces/best of 3)	Fernandez-Fernandez et al. (2007) Mackie (2013) Morante and Brotherhood (2005) Sánchez-Pay (2021)	4	5	M: 98.89‡ (75.74, 129.13)	NA	(55.54, 176.10)	66.83	Very slight changes in the estimates of the means and standard errors.	NA
	Match duration (min) (women/national hard surfaces/best of 3)	Galé-Ansodi (2017a) Perri et al. (2016) Stare et al. (2015) Torres-Luque et al. (2011)	4	5	M: 72.74‡ (48.66, 108.74)	NA	(27.88, 189.78)	88.85	Very slight changes in the estimates of the means and standard errors.	M: 75.88 (40.57, 141.91)
Male vs. female players	Match duration (min) (hard surfaces)	Perri et al. (2016) Stare et al. (2015) Torres-Luque et al. (2011)	3	4	MD: 8.8‡ (1.15, 16.4)	**0.039**	(1.65, 15.95)	0	Very slight changes in the estimates of the means and standard errors.	10.2 (-16.1, 36.5)
Rally Duration										
Male players	Rally duration (s) (men international/hard + grass + clay surfaces)	Carboch et al. (2019) Filipcic et al. (2021) Hornery et al. (2007) Mackie (2013) Mendez-Villanueva et al. (2007) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998) Stare et al. (2015) Takahashi et al. (2006) Yusoff & Krasilshchikov (2021)	11	21	M: 5.53 (4.87, 6.28)	**0.00962**	(3.29, 9.29)	88.16	Very slight changes in the estimates of the means and standard errors.	M: 5.65 (4.95, 6.45)
	Rally duration (s)	Carboch et al. (2019)	8	9	M: 5.63 (4.87, 6.51)	NA	(3.87, 8.21)	89.15	Very slight changes in	M: 5.74 (4.92, 6.69)

	(men international/hard surfaces)	Filipcic et al. (2021) Hornery et al. (2007) Mackie (2013) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001) Stare et al. (2015) Takahashi et al. (2006)							the estimates of the means and standard errors.	
	Rally duration (s) (men international/clay surfaces)	Carboch et al. (2019) Hornery et al. (2007) Mendez-Villanueva et al. (2007) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998) Takahashi et al. (2006)	6	6	M: 7.09‡ (6.23, 8.06)	NA	(5.99, 8.39)	0	Very slight changes in the estimates of the means and standard errors.	NA
	Rally duration (s) (men international/grass surfaces)	Carboch et al. (2019) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998) Takahashi et al. (2006)	5	5	M: 4.27‡ (3.12, 5.85)	NA	(1.82, 9.99)	93.33	Very slight changes in the estimates of the means and standard errors.	NA
	Rally duration (s) (men national/hard + clay surfaces)	Filipcic et al. (2021) Gallo-Salazar et al. (2019) Kilit and Arslan (2017) Kilit and Arslan (2018) Stare et al. (2015) Torres-Luque et al. (2011)	6	8	M: 8.50‡ (7.22, 10.01)	0.0809	(6.07, 11.90)	69.98	Very slight changes in the estimates of the means and standard errors.	M: 8.86 (7.51, 10.46)
	Rally duration (s) (men national/hard surfaces)	Filipcic et al. (2021) Gallo-Salazar et al. (2019) Kilit and Arslan (2018) Stare et al. (2015) Torres-Luque et al. (2011)	5	6	M: 8.28‡ (6.90, 9.95)	NA	(5.73, 11.98)	71.51	Very slight changes in the estimates of the means and standard errors.	M: 8.86 (7.51, 10.46)
Female players	Rally duration (s)	Carboch and Plachá (2018)	7	13	M: 6.36 (5.35, 7.56)	**0.0246**	(3.67, 11.02)	90.16	Very slight changes in	NA

	(women international/ hard + grass + clay surfaces)	Fernandez-Fernandez et al. (2007) Fernandez-Fernandez et al. (2008) Mackie (2013) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998)							the estimates of the means and standard errors.	
	Rally duration (s) (women international/hard surfaces)	Carboch and Plachá (2018) Fernandez-Fernandez et al. (2007) Mackie (2013) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001)	5	7	M: 6.37‡ (5.01, 8.11)	NA	(3.27, 12.43)	92.96	Very slight changes in the estimates of the means and standard errors.	NA
	Rally duration (s) (women international/clay surfaces)	Fernandez-Fernandez et al. (2008) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998)	3	3	M: 8.82‡ (5.18, 15.01)	NA	(2.75, 28.34)	0	Very slight changes in the estimates of the means and standard errors.	NA
	Rally duration (s) (women international/grass surfaces)	Morante and Brotherhood (2005) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998)	3	3	M: 5.67‡ (4.78, 6.73)	NA	(3.89, 8.27)	0	Very slight changes in the estimates of the means and standard errors.	NA
Male vs. female players	Rally duration (s) (international/hard + grass + clay surfaces)	Carboch et al. (2020) Mackie (2013) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001) O'Donoghue and Liddle (1998)	5	11	MD: -0.475‡ (-1.99, 1.04)	0.41	(-3.28, 2.33)	74.78	Very slight changes in the estimates of the means and standard errors.	NA
	Rally duration (s) (international/hard surfaces)	Carboch et al. (2020) Mackie (2013) Morante and Brotherhood (2005) O'Donoghue and Ingram (2001)	4	6	MD: -0.399‡ (-2.05, 1.26)	0.498	(-3.86, 3.06)	82.17	Very slight changes in the estimates of the means and standard errors.	NA
	Rally duration (s) (international/grass surfaces)	Morante and Brotherhood (2005) O'Donoghue and Liddle (1998)	3	3	MD: -1.56‡ (-5.34, 2.22)	0.197	(-8.02, 4.89)	87.29	Very slight changes in the estimates of the means	NA

		O'Donoghue and Ingram (2001)							and standard errors.	
Effective playing time										
Male players	Effective playing time (s) (men international/ hard + grass + clay surfaces)	Yusoff and Krasilshchikov (2021) Filipcic et al. (2021) Mackie (2013) Mendez-Villanueva et al. (2007) Morante and Brotherhood (2005) O'Donoghue and Liddle (1998) Stare et al. (2015) Whiteside and Reid (2017)	8	13	M: 18.55 (15.83, 21.73)	0.563	(11.69, 29.43)	90.49	Very slight changes in the estimates of the means and standard errors.	M: 18.88 (15.47, 23.04)
	Effective playing time (s) (men international/hard surfaces)	Filipcic et al. (2021) Mackie (2013) Morante and Brotherhood (2005) Stare et al. (2015) Whiteside and Reid (2017)	5	8	M: 18.20‡ (14.97, 22.13)	NA	(10.43, 31.77)	92.45	Very slight changes in the estimates of the means and standard errors.	M: 16.72 (13.15, 21.26)
	Effective playing time (s) (junior men national/hard + clay surfaces)	Filipcic et al. (2021) Gallo-Salazar et al. (2019) Kilit and Arslan (2017) Kilit and Arslan (2018) Stare et al. (2015) Torres-Luques et al. (2011)	6	8	M: 26.16 (23.28, 29.41)	0.86	(18.4, 37.2)	87.53	Very slight changes in the estimates of the means and standard errors.	M: 25.89 (22.31, 30.06)
	Effective playing time (s) (junior men national/hard surfaces)	Filipcic et al. (2021) Gallo-Salazar et al. (2019) Kilit and Arslan (2018) Torres-Luques et al. (2011) Stare et al. (2015)	5	6	M: 25.63 (21.38, 30.74)	NA	(15.80, 41.59)	90.69	Very slight changes in the estimates of the means and standard errors.	M: 25.17 (19.47, 32.53)
Female players	Effective playing time (s) (women international/ hard + grass + clay surfaces)	Fernandez-Fernandez et al. (2007) Fernandez-Fernandez et al. (2008) Mackie (2013) Morante and Brotherhood (2005)	6	11	M: 20.04 (17.25, 23.27)	0.469	(13.18, 30.46)	88.62	Very slight changes in the estimates of the means and standard errors.	M: 19.57 (15.22, 25.16)

		O'Donoghue and Liddle (1998) Whiteside and Reid (2017)								
	Effective playing time (s) (women international/hard surfaces)	Fernandez-Fernandez et al. (2007) Mackie (2013) Morante and Brotherhood (2005) Whiteside and Reid (2017)	4	7	M: 20.02‡ (15.38, 26.07)	NA	(10.40, 38.56)	92.31	Very slight changes in the estimates of the means and standard errors.	M: 19.09 (12.62, 28.88)
Male vs. female players	Effective playing time (%) (international/ hard + grass + clay surfaces)	Mackie (2013) Morante and Brotherhood (2005) O'Donoghue and Liddle (1998) Whiteside and Reid (2017)	4	9	MD: -2.02‡ (-6.12, 2.08)	0.215	(-10.66, 6.63)	82.64	Very slight changes in the estimates of the means and standard errors.	MD: -1.16 (-7.82, 5.49)
	Effective playing time (%) (international/ hard surfaces)	Mackie (2013) Morante and Brotherhood (2005) Whiteside and Reid (2017)	3	6	MD: -1.2‡ (-4.89, 2.5)	0.295	(-6.92, 4.53)	46.30	Very slight changes in the estimates of the means and standard errors.	NA

3.2 Movement characteristics

	Outcome (Description)	**Studies included in meta-analysis**	**Number of studies** (n)	**Number of outcomes (n)**	**Effect size** (95%CI)	**Test for (Subgroup) Differences** (p value)	**95% PI** ┼	**I^2** (%)	**Sensitivity analysis for ρ**	**Sensitivity analysis for imputed SDs ⊦**
Distance covered per match										
Male players	Distance covered per match (m) (men/international hard + grass + clay surfaces/best of 5)	Cui et al. (2020a) Kovalchik and Reid (2017) Maquirriain et al. (2016) Reid et al. (2016)	4	11	M: 2292.29‡ (1767.40, 2973.07)	0.533	(1243.35, 4226.16)	85.17	Very slight changes in the estimates of the means and standard errors.	M: 2382.11 (1567.46, 3620.14)
	Distance covered per match (m) (men/international hard surfaces/best of 5)	Cui et al. (2020a) Kovalchik and Reid (2017) Reid et al. (2016)	3	6	M: 2164.33‡ (1775.43, 2638.40)	NA	(1372.68, 3412.53)	26.78	Very slight changes in the estimates of the means	M: 2189.41 (1401.48, 3420.32)

									and standard errors.	
	Distance covered per match (m) (men/national hard + clay surfaces/best of 3)	Filipcic et al. (2021) Galé-Ansodi et al. (2017b) Gallo-Salazar et al. (2019) Hoppe et al. (2014) Hoppe et al. (2016) Kilit and Arslan (2017) Kilit and Arslan (2018) Perri et al. (2018)	8	12	M: 3313.59 (2870.06, 3825.67)	0.886	(2247.86, 4884.59)	85.55	Very slight changes in the estimates of the means and standard errors.	NA
	Distance covered per match (m) (men/national hard surfaces/best of 3)	Filipcic et al. (2021) Galé-Ansodi et al. (2017b) Gallo-Salazar et al. (2019) Kilit and Arslan (2018) Perri et al. (2018)	5	8	M: 3200.72‡ (2322.31, 4411.40)	NA	(1363.13, 7515.53)	92.65	Very slight changes in the estimates of the means and standard errors.	NA
	Distance covered per match (m) (men/national clay surfaces/best of 3)	Hoppe et al. (2014) Hoppe et al. (2016) Kilit and Arslan (2017) Kilit and Arslan (2018)	4	4	M: 3272.27‡ (3063.74, 3494.99	NA	(2940.46, 3641.51)	0	Very slight changes in the estimates of the means and standard errors.	NA
Female players	Distance covered per match (m) (women/international hard + grass + clay surfaces)	Cui et al. (2018) Kovalchik and Reid (2017) Reid et al. (2016)	3	7	M: 1249.13‡ (766.60, 2035.39)	NE	(383.24, 4071.43)	87.02	Very slight changes in the estimates of the means and standard errors.	M: 1304.77 (652.42, 2609.40)
	Distance covered per match (m) (women/national hard surfaces)	Galé-Ansodi et al. (2017a) Galé-Ansodi et al. (2017b) Perri et al. (2018)	3	4	M: 2966.77‡ (2268.63, 3879.76)	NA	(1473.06, 5975.13)	67.73	Very slight changes in the estimates of the means and standard errors.	NA
				Distance Covered per Set						
Male players	Distance covered per set (m) (men/international all surfaces)	Cui et al. (2020a) Pereira et al. (2016a) Reid et al. (2016)	3	11	M: 606.97‡ (443.07, 831.51)	0.218	(278.55, 1322.62)	78.10	Very slight changes in the estimates of the means	NA

									and standard errors.	
Female players	Distance covered per set (m) (women/international all surfaces)	Cui et al. (2020a) Reid et al. (2016)	2	5	M: 573.6‡ (372.7, 882.7)	NE	NE	84.70	Very slight changes in the estimates of the means and standard errors.	NA
Distance covered per point										
Male players	Distance covered per point (m) (men/international hard + grass + clay surfaces)	Cui et al. (2020a) Filipcic et al. (2021) Kovalchik and Reid (2017) Martínez-Gallego et al. (2019) Pereira et al. (2016) Whiteside et al. (2015)	6	16	M: 9.60 (7.56, 12.19)	0.925	(5.56, 16.57)	93.71	Very slight changes in the estimates of the means and standard errors.	M: 9.47 (8.16, 10.99)
	Distance covered per point (m) (men/international hard surfaces)	Cui et al. (2020a) Filipcic et al. (2021) Kovalchik and Reid (2017) Martínez-Gallego et al. (2019) Whiteside et al. (2015)	5	10	M: 9.66‡ (7.59, 12.30)	NA	(5.55, 16.83)	94.50	Very slight changes in the estimates of the means and standard errors.	M: 9.53 (8.27, 11.00)
Female players	Distance covered per point (m) (women/international all surfaces)	Cui et al. (2018) Kovalchik and Reid (2017) Reid et al. (2016)	3	7	M: 8.22‡ (4.44, 15.20)	NE	(1.70, 39.79)	96.70	Very slight changes in the estimates of the means and standard errors.	9.36 (5.25, 16.70)
	Distance covered per point (m) (women/international hard surfaces)	Cui et al. (2018) Kovalchik and Reid (2017) Reid et al. (2016)	3	5	M: 8.28‡ (4.42, 15.50)	NE	(1.69, 40.52)	96.67	Very slight changes in the estimates of the means and standard errors.	9.44 (4.78 18.63)
Distance per minute										
Male players	Distance per minute (men/national hard surfaces)	Fernández-Elias et al. (2020) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Gallo-Salazar et al. (2019)	5	9	M: 48.22‡ (45.34 51.28)	NA	(41.46, 56.08)	66.27	Very slight changes in the estimates of the means and standard errors.	NA

		Perri et al. (2018)								
Female players	Distance per minute (women/national hard surfaces)	Galé-Ansodi et al. (2017a) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Perri et al. (2018)	4	5	M: 45.44‡ (41.52, 49.72)	NA	(35.76, 57.73)	87.74	Very slight changes in the estimates of the means and standard errors.	NA
Male vs. female players	Distance per minute (m) (national/hard surfaces)	Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Perri et al. (2018)	3	4	MD: 2.36‡ (1.38, 3.34)	0.0111	(1.50, 3.22)	0	Very slight changes in the estimates of the means and standard errors.	NA
Peak Running Speed										
Male players	Peak running speed (m/s) (men/international/hard surfaces)	Fernández-Elias et al. (2020) Filipcic et al. (2021) Kovalchik and Reid (2017) Whiteside et al. (2015)	4	5	M: 5.46‡ (4.04, 7.38)	NA	(2.95, 10.12)	81.83	Very slight changes in the estimates of the means and standard errors.	M: 5.81 (4.91, 6.89)
	Peak running speed (m/s) (men/national/hard + clay surfaces)	Filipcic et al. (2021) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Gallo-Salazar et al. (2019) Hoppe et al. (2014) Hoppe et al. (2016)	6	7	M: 4.82 (4.28, 5.43)	0.11	(3.58, 6.49)	92.82	Very slight changes in the estimates of the means and standard errors.	NA
	Peak running speed (m/s) (men/national/hard surfaces)	Filipcic et al. (2021) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Gallo-Salazar et al. (2019)	4	5	M: 5.06‡ (4.27, 5.99)	NA	(3.32 7.71)	94.45	Very slight changes in the estimates of the means and standard errors.	NA
Female players	Peak running speed (m/s) (women/national/hard surfaces)	Galé-Ansodi et al. (2017a) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018)	3	3	M: 4.18‡ (3.83, 4.55)	NA	(3.36, 5.20)	64.94	Very slight changes in the estimates of the means and standard errors.	NA
Average Running Speed										
Male players	Average running speed (m/s)	Filipcic et al. (2021)	3	4	M: 2.07‡	NA	(0.05, 90.22)	98.45	Very slight changes in	M: 1.99 (0.47, 8.35)

	(men/international hard surfaces)	Martinez-Gallego et al. (2019) Reid et al. (2016)			(0.57, 7.62)				the estimates of the means and standard errors.	
	Average running speed (m/s) (men/national hard + clay surfaces)	Filipcic et al. (2021) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Gallo-Salazar et al. (2019) Hoppe et al. (2014) Hoppe et al. (2016) Kilit and Arslan (2017) Kilit and Arslan (2018)	8	10	M: 1.13 (0.63, 2.04)	**0.0473**	(0.16, 7.85)	99.81	Very slight changes in the estimates of the means and standard errors.	NA
	Average running speed (m/s) (men/national hard surfaces)	Filipcic et al. (2021) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018) Gallo-Salazar et al. (2019) Kilit and Arslan (2018)	5	6	M: 1.50‡ (0.58, 3.90)	NA	(0.16, 14.47)	99.79	Very slight changes in the estimates of the means and standard errors.	NA
	Average running speed (m/s) (men/national clay surfaces)	Hoppe et al. (2014) Hoppe et al. (2016) Kilit and Arslan (2017) Kilit and Arslan (2018)	4	4	M:0.70‡ (0.7, 0.7)	NA	(0.7, 0.7)	0	Very slight changes in the estimates of the means and standard errors.	NA
Female players	Average running speed (m/s) (women/national hard surfaces)	Galé-Ansodi et al. (2017a) Galé-Ansodi et al. (2017b) Galé-Ansodi et al. (2018)	3	3	M: 2.89‡ (2.69, 3.11)	NA	(2.44, 3.43)	30.77	Very slight changes in the estimates of the means and standard errors.	NA

3.3 Stroke characteristics

	Outcome (Description)	**Studies included in meta-analysis**	**Number of**	**Number of**	**Effect size** (95%CI)	**Test for (Subgroup) Differences**	**95% PI** ┼	**I^2** (%)	**Sensitivity analysis for ρ**	**Sensitivity analysis for**

			studies (n)	outcomes (n)		(p value)				imputed SDs ŀ
Strokes per rally										
Male players	Strokes per rally (men/international/all surfaces)	Carboch et al. (2019) Filipcic et al. (2021) Hornery et al. (2007) Kovalchik and Reid (2017) Mendez-Villanueva et al. (2007) Stare et al. (2015) Takahashi et al. (2006) Yusoff & Krasilshchikov (2021)	8	14	M: 4.11‡ (3.41, 4.95)	0.716	(2.47, 6.85)	82.66	Very slight changes in the estimates of the means and standard errors.	M: 4.10 (3.24, 5.19)
	Strokes per rally (men/international/hard surfaces)	Carboch et al. (2019) Filipcic et al. (2021) Hornery et al. (2007) Kovalchik and Reid (2017) Takahashi et al. (2006) Stare et al. (2015)	6	7	M: 4.24‡ (3.43, 5.25)	NA	(2.41, 7.47)	89.21	Very slight changes in the estimates of the means and standard errors.	M: 4.29 (3.13, 5.89)
	Strokes per rally (men/international/clay surfaces)	Carboch et al. (2019) Hornery et al. (2007) Mendez-Villanueva et al. (2007) Takahashi et al. (2006)	4	4	M: 4.76‡ (3.41, 6.66)	NA	(2.47, 9.18)	48.36	Very slight changes in the estimates of the means and standard errors.	NA
	Strokes per rally (men juniors/national/hard + clay surfaces)	Gallo-Salazar et al. (2019) Kilit and Arslan (2017) Kilit and Arslan (2018) Stare et al. (2015) Torres-Luque et al. (2011)	5	7	M: 4.92‡ (3.22, 7.50)	0.328	(1.72, 14.10)	99.01	Very slight changes in the estimates of the means and standard errors.	M: 4.88 (2.68, 8.89)
	Strokes per rally (men juniors/national/hard surfaces)	Gallo-Salazar et al. (2019) Kilit and Arslan (2018) Stare et al. (2015) Torres-Luque et al. (2011)	4	5	M: 4.63‡ (2.63, 8.15)	NA	(1.19, 18.02)	99.26	Very slight changes in the estimates of the means	M: 4.44 (1.63, 12.11)

									and standard errors.	
Female players	Strokes per rally (women/international/hard + clay surfaces)	Carboch et al. (2018) Fernandez-Fernandez et al. (2007) Fernandez-Fernandez et al. (2008) Kovalchik and Reid (2017)	4	5	M: 3.86‡ (2.39, 6.22)	**0.0415**	(1.52, 9.80)	71.62	Very slight changes in the estimates of the means and standard errors.	M: 3.26 (1.31, 8.16)
First Serve Speed										
Male players	First Serve Speed (km/h) (men/international all surfaces)	Brown (2021) Cui et al. (2020a) Fitzpatrick et al. (2019) Hornery et al. (2007) Kovalchik and Reid (2017) Reid et al. (2016)	6	19	M: 182.42 (178.06, 186.89)	0.099	(171.20, 194.38)	95.25	Very slight changes in the estimates of the means and standard errors.	M: 183.01 (177.88, 188.30)
	First Serve Speed (km/h) (men/international hard surfaces)	Cui et al. (2020a) Hornery et al. (2007) Kovalchik and Reid (2017) Reid et al. (2016)	4	11	M: 181.93‡ (176.58, 187.44)	NA	(169.20, 195.61)	84.91	Very slight changes in the estimates of the means and standard errors.	M: 182.73, (174.86, 190.96)
	First Serve Speed (km/h) (men/international clay surfaces)	Cui et al. (2020a) Fitzpatrick et al. (2019) Hornery et al. (2007)	3	7	M: 180.02‡ (168.87, 191.92)	NA	(153.79, 210.73)	84.73	Very slight changes in the estimates of the means and standard errors.	NA
Female players	First Serve Speed (km/h) (women/international all surfaces)	Brown (2021) Fitzpatrick et al. (2019) Kovalchik and Reid (2017) Reid et al. (2016)	4	5	M: 156.13‡ (151.40, 161.00)	NE	(143.69, 169.64)	94.60	Very slight changes in the estimates of the means and standard errors.	M:156.87 (150.01, 164.05)
Second Serve Speed										

Male players	Second Serve Speed (km/h) (men/international all surfaces)	Brown (2021) Cui et al. (2020a) Hornery et al. (2007) Reid et al. (2016)	4	16	M: 148.86‡ (135.03, 164.10)	0.268	(121.76, 181.99)	97.42	Very slight changes in the estimates of the means and standard errors.	NA
	Second Serve Speed (km/h) (men/international hard surfaces)	Cui et al. (2020a) Hornery et al. (2007) Reid et al. (2016)	3	10	M: 146.38‡ (125.32, 170.97)	NA	(99.92, 214.44)	95.84	Very slight changes in the estimates of the means and standard errors.	NA
Female players	Second Serve Speed (km/h) (women/international all surfaces)	Brown (2021) Reid et al. (2016)	2	2	M: 133.68‡ (106.56, 167.69)	NE	NE	95.39	Very slight changes in the estimates of the means and standard errors.	NA

M: mean, MD: Mean Difference, SD: Standard Deviation, 95%CI: 95% Confidence Interval, 95%PI: 95% Prediction Interval. NA: Not applicable. NE: Not estimable.

All outcomes were transformed to a logscale and then back transformed via exponentiating the values. This was done to ensure that no implausible (i.e., negative) estimates were obtained. The prediction interval indicates the heterogeneity in the data and the range of potential values that could be possible in future studies.

Different correlational values (0, 0.2, 0.4, 0.6, 1.0) for ρ were used for sensitivity analyses. For the main analysis a value of ρ = 0.8 was used.
‡ A low number of studies leads to a low number of degrees of freedom (df). The confidence in these results is low. This is the case if df < 4.

⊥ Please note that the estimate for the 95% PI is not very accurate in the case of < 10 studies.
ⱶ Sensitivity analysis was performed by removal of all studies with imputed SDs.