

Supplementary Table 1. Temperature Classification of Included Studies

Temperature subgroups were defined as $\approx 5^{\circ}\text{C}$ ($3\text{--}7^{\circ}\text{C}$), $\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$), and $\approx 15^{\circ}\text{C}$ ($13\text{--}20^{\circ}\text{C}$), based on the categories used in previous CWI meta-analyses (Machado et al., 2016; Hohenauer et al., 2015).

1. Delayed Onset Muscle Soreness (DOMS) — k = 47

Study	Actual Temperature ($^{\circ}\text{C}$)	Assigned Subgroup
Santos et al. (2012)	5	$\approx 5^{\circ}\text{C}$ ($3\text{--}7^{\circ}\text{C}$)
Vieira et al. (2016) — 5°C arm	5	$\approx 5^{\circ}\text{C}$ ($3\text{--}7^{\circ}\text{C}$)
Glasgow et al. (2014) — 6°C arm	6	$\approx 5^{\circ}\text{C}$ ($3\text{--}7^{\circ}\text{C}$)
Pointon et al. (2012)	8.9	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Bailey et al. (2007)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Ingram et al. (2009)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Jakeman et al. (2009)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Pournot et al. (2011)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Glasgow et al. (2014) — 10°C arm	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Marquet et al. (2015)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Delextrat et al. (2013) — Male	11	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Delextrat et al. (2013) — Female	11	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Sánchez-Ureña et al. (2017) — continuous	12	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Sánchez-Ureña et al. (2017) — intermittent	12	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Stenson et al. (2017)	12	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Mokhtar et al. (2019) — continuous	12	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Mokhtar et al. (2019) — intermittent	12	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
L'Hermette et al. (2020)	12	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Doeringer et al. (2018)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Stearns et al. (2018)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Barber et al. (2020)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Doeringer et al. (2020)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Kositsky & Avela (2020)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Pesenti et al. (2020)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Hohenauer et al. (2020)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Coelho et al. (2021)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Bartley et al. (2021)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)
Lindsay et al. (2017)	10	$\approx 10^{\circ}\text{C}$ ($8\text{--}12^{\circ}\text{C}$)

Study	Actual Temperature (°C)	Assigned Subgroup
Nasser et al. (2023)	11	≈10°C (8–12°C)
Stella et al. (2024)	10	≈10°C (8–12°C)
Wei et al. (2025)	10	≈10°C (8–12°C)
Skurvydas et al. (2006)	15	≈15°C (13–20°C)
Goodall & Howatson (2008)	15	≈15°C (13–20°C)
Vaile et al. (2008)	15	≈15°C (13–20°C)
Howatson et al. (2009)	15	≈15°C (13–20°C)
Brophy-Williams et al. (2011)	15	≈15°C (13–20°C)
Leeder et al. (2015)	14	≈15°C (13–20°C)
Moreira et al. (2015)	15	≈15°C (13–20°C)
Vieira et al. (2016) — 15°C arm	15	≈15°C (13–20°C)
Fonseca et al. (2016)	15	≈15°C (13–20°C)
Yeung et al. (2016)	15	≈15°C (13–20°C)
Sánchez-Ureña et al. (2018) — continuous	14	≈15°C (13–20°C)
Sánchez-Ureña et al. (2018) — intermittent	14	≈15°C (13–20°C)
Missau et al. (2018)	15	≈15°C (13–20°C)
Wiewelhove et al. (2018)	15	≈15°C (13–20°C)
Qu et al. (2020)	15	≈15°C (13–20°C)
White et al. (2014)†	20	≈15°C (13–20°C)

2. Creatine Kinase (CK) — k = 34

Study	Actual Temperature (°C)	Assigned Subgroup
Santos et al. (2012)	5	≈5°C (3–7°C)
Glasgow et al. (2014) — 6°C arm	6	≈5°C (3–7°C)
Vieira et al. (2016) — 5°C arm	5	≈5°C (3–7°C)
Barros et al. (2025)	5	≈5°C (3–7°C)
Roonkiani et al. (2020)*	8	≈10°C (8–12°C)
Pointon et al. (2012)	8.9	≈10°C (8–12°C)
Bailey et al. (2007)	10	≈10°C (8–12°C)
Ingram et al. (2009)	10	≈10°C (8–12°C)
Jakeman et al. (2009)	10	≈10°C (8–12°C)

Study	Actual Temperature (°C)	Assigned Subgroup
Pournot et al. (2011)	10	≈10°C (8–12°C)
Glasgow et al. (2014) — 10°C arm	10	≈10°C (8–12°C)
Siqueira et al. (2018)	10	≈10°C (8–12°C)
Silva et al. (2018)	12	≈10°C (8–12°C)
Darani et al. (2018)	10	≈10°C (8–12°C)
Stearns et al. (2018)	10	≈10°C (8–12°C)
Barber et al. (2020)	10	≈10°C (8–12°C)
Dantas et al. (2020)	10	≈10°C (8–12°C)
Kositsky & Avela (2020)	10	≈10°C (8–12°C)
Coelho et al. (2021)	10	≈10°C (8–12°C)
Bartley et al. (2021)	10	≈10°C (8–12°C)
Nasser et al. (2023)	11.3	≈10°C (8–12°C)
Pinheiro et al. (2024)	10	≈10°C (8–12°C)
Skurvydas et al. (2006)	15	≈15°C (13–20°C)
Goodall & Howatson (2008)	15	≈15°C (13–20°C)
Vaile et al. (2008)	15	≈15°C (13–20°C)
Howatson et al. (2009)	15	≈15°C (13–20°C)
Takeda et al. (2014)	15	≈15°C (13–20°C)
Leeder et al. (2015)	14	≈15°C (13–20°C)
Vieira et al. (2016) — 15°C arm	15	≈15°C (13–20°C)
Fonseca et al. (2016)	15	≈15°C (13–20°C)
Schimpchen et al. (2017)	12–15	≈15°C (13–20°C)
Missau et al. (2018)	15	≈15°C (13–20°C)
Wiewelhove et al. (2018)	15	≈15°C (13–20°C)
Qu et al. (2020)	15	≈15°C (13–20°C)

3. Myoglobin (Mb) — k = 7

Study	Actual Temperature (°C)	Assigned Subgroup
Bailey et al. (2007)	10	≈10°C
Lindsay et al. (2017)	10	≈10°C
Stearns et al. (2018)	10	≈10°C

Study	Actual Temperature (°C)	Assigned Subgroup
Bartley et al. (2021)	10	≈10°C
Vaile et al. (2008)	15	≈15°C (13–20°C)
Çakir et al. (2019)	15	≈15°C (13–20°C)
Qu et al. (2022)	15	≈15°C (13–20°C)

* Roonkiani et al. (2020, 8°C) was assigned to the ≈10°C subgroup as 8°C falls within the defined range of 8–12°C.

† White et al. (2014, 20°C) was assigned to the ≈15°C subgroup. The upper boundary of this subgroup was defined as 20°C to accommodate studies using slightly warmer water, consistent with the 'cool water' range described in previous reviews.