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Abstract

'Racial thinking' assumes that 'Races' exist and that they have inherent characteristics. Through 'othering' and false universalism, racial stereotypes become established, embedded and often linked through biological determinism to assumed physicality of Black athletes.

There are currently 12 men's teams that play Test cricket – the élite and most unrestricted version of the game. The West Indies team is one of the 12 and stereotypes based on flawed racial thinking exist in relation to perceptions of natural ability and aggression amongst fast bowlers from the West Indies. The present study refutes these stereotypes through statistical analysis of data from a reputable and publicly available digital archive. Two-tailed *Z*-tests for proportions between independent samples were conducted, having applied the Šidák correction to avoid inflating the error rate. Cohen's *h* was reported to indicate the practical implications of all statistically significant differences.

There are five principal conclusions. First, 'Races' do not exist as homogeneous populations and this creates an insurmountable problem of operational definitions for comparative analyses. Second, acknowledging the problematic nature of 'Races', the uneven distribution of 'racial groups' shows no significant differences in the prevalence of fast bowlers between Black West Indians and White Australians ($Z = 1.98$, $P > 0.02$). Third, there is a mistaken inference in racial thinking that skin pigmentation is linked to sports performance – they are fast bowlers *because* they are Black. Fourth, an extension of the faulty assumptions about genetics is that Black fast bowlers would be the *fastest* and (absurdly) that the fastest bowlers would also be the *Blackest* – both are unequivocally false. Finally, racial thinking offers a partial explanation for the assumed prevalence of Pakistani fast bowlers, yet given the shared history prior to partition in 1947, it would be illogical to suggest that Pakistanis were 'racially' different from Indians.

Key Words

'race', cricket, West Indies, racial science, fast bowling, two-tailed *Z*-test

Background and context

Cricket is a striking and fielding game with a rich history of over 400 years and a colonial past (Birley 2003; Malcolm 2013). It is the second most popular spectator sport globally (Felton et al. 2023), with the traditional long-form of the game, Test cricket, played by men's teams from the 12 countries with full member status of the International Cricket Council. Within cricket teams, players fulfil different roles. Bowlers are the equivalent of the pitchers in baseball, and fast bowlers attempt to deliver the ball as quickly as possible but with sufficient control to execute fine motor skills. Fast bowling is a repeated explosive action, and in men's cricket, the ball is delivered at speeds in excess of 129 $km \cdot h^{-1}$ (Johnstone et al. 2014).

Initially emblematic of British cultural hegemony over colonies, since the 1900s West Indian cricket [1] has been a site for the contestation of the links between 'Race' and empire (Levett 2017), and as Hector and Wagg (2005, 167) have noted, "successive generations of West Indian cricketers were nationalists who saw the West Indies team as a flagship for independence and nascent nationhood." With sustained and effective fast bowling as a tactical choice and a legacy from the inter-war years (Savidge and McLennan 1995), the West Indies team dominated men's Test cricket from the mid-1970s to the early 1990s (Williams 2001).

There has been extensive debate over the use of skin colour as an analytical basis for understanding 'Race' (e.g., Banton 2012; Wade 2012) and for the epidermalization of

[1] The West Indies team comprises nation-states and territories from the Caribbean: Anguilla, Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Trinidad and Tobago, and U.S. Virgin Islands.

colonial oppression (Song 2017). In the present consideration of racial thinking (and therefore of 'Race') in cricket, however, Jablonski's (2020, 437) point of departure is helpful: "skin colour is the primary physical criterion by which people have been classified into groups in the Western scientific tradition." It is also the basis of several research studies in sport and exercise (e.g., Maguire 1991; Nobis and Lazaridou 2023).

A comparative overview of all countries where men's teams play Test cricket is illuminating (see Table 1) [2]. In summary, there is compelling statistical evidence ($P \leq 0.001$) that the West Indies has produced significantly more fast bowlers as a proportion of Test players than Bangladesh, England, India, New Zealand, Pakistan, Sri Lanka and Zimbabwe, and Australia has produced more than India, Sri Lanka and Zimbabwe (see Table 2) [3]. It will become clear in the discussion below that these trends in the data cannot be reduced to a simple matter of 'race'.

[2] Data on individual cricketers are taken from a publicly available and reputable digital archive, ESPNcricinfo.com. The focus of the discussion is men's Test cricket because there is an insufficient database to draw meaningful conclusions for women's Test cricket.

[3] Given the exploratory nature of the analyses, and the categorical nature of data, we used the two-tailed *Z*-test for proportions between independent samples to test the null hypotheses (H_0): $p_1 - p_2 = 0$ or $p_1 = p_2$, against an alternative hypothesis (H_1): $p_1 - p_2 \neq 0$ or $p_1 \neq p_2$; where p_1 = the proportion for sample 1, and p_2 = proportion for sample 2 (Newcombe, 1998). Because we were concerned that family-wise error would be inflated by using the *Z*-test multiple times during the data analyses, leading to the potential for erroneously making *type 1* errors, we applied the Šidák (1967) correction to the original level of statistical significance ($\alpha \leq 0.05$) throughout; resulting in a level of statistical significance of $\alpha' \leq 0.02$. Cohen's *h* was used as the effect size statistic to indicate the practical significance of all statistically significant differences between proportions. As a reference, effect sizes were defined as 'small' [$h = 0.05$ to 0.10], 'medium' [$h = 0.20$ to 0.25], and 'large' [$h = 0.35$ to 0.39] (Cohen, 1988). Finally, we also estimated the *post-hoc* statistical power for all statistically significant differences between proportions.

Table 1: Men's test players, fast bowlers and overall populations of Test countries (to 31 December 2024)

	Test status conferred	Test players (*n* =) [a]	Fast bowlers (*n* =) [a]	2024 population (millions) [b]
Afghanistan	2017	35	1	42.7
Australia	1909	375	36	26.7
Bangladesh	2000	106	3	173.6
England	1909	560	39	69.1
India	1926	316	10	1450.0
Ireland	2017	29	0	5.3
New Zealand	1926	288	11	5.2
Pakistan	1952	257	12	251.3
South Africa	1909	304	32	64.0
Sri Lanka	1981	167	3	23.1
West Indies	1926	340	49	6.3
Zimbabwe	1992	132	1	16.7

Sources: [a] ESPN Crickinfo.com (2025); [b] United Nations (2024).

Table 2: Summary of estimated statistically significant differences ($\alpha' \leq 0.02$) between the proportions of fast bowlers and Test players from Australia and the West Indies

Comparisons between Test players who are fast bowlers from Test cricketing countries	Difference between proportions	*Z*-test outcome	Effect size and Power
Australia (FB = 36, TP = 375, *p* = 0.0960) ***vs.*** **India** (FB = 10, TP = 316, *p* = 0.0317)	|D| = 0.064 *CI* = 0.029 through 0.100	*Z* = 3.38, *P* < 0.001	*h* = 0.27, *Power* = 0.999998
Australia (FB = 36, TP = 375, *p* = 0.0960) ***vs.*** **Sri Lanka** (FB = 3, TP = 167, *p* = 0.0180)	|D| = 0.078 *CI* = 0.042 through 0.114	*Z* = 3.24, *P* = 0.001	*h* = 0.36, *Power* = 0.999681
Australia (FB = 36, TP = 375, *p* = 0.0960) ***vs.*** **Zimbabwe** (FB = 1, TP = 132, *p* = 0.0076)	|D| = 0.088 *CI* = 0.055 through 0.122	*Z* = 3.36, *P* < 0.001	*h* = 0.46, *Power* = 0.998561
Bangladesh (FB = 3, TP = 106, *p* = 0.0283) ***vs.*** **West Indies** (FB = 49, TP = 340, *p* = 0.1441)	|D| = 0.120 *CI* = -0.165 through -0.067	*Z* = 3.24, *P* = 0.001	*h* = 0.44, *Power* = 0.994372
England (FB = 39, TP = 560, *p* = 0.0697) ***vs.*** **West Indies** (FB = 49, TP = 340, *p* = 0.1441)	|D| = 0.074 *CI* = -0.117 through -0.032	*Z* = 3.64, *P* < 0.001	*h* = 0.24, *Power* = 0.999998
India (FB = 10, TP = 316, *p* = 0.0317) ***vs.*** **West Indies** (FB = 49, TP = 340, *p* = 0.1441)	|D| = 0.110 *CI* = -0.154 through -0.070	*Z* = 5.03, *P* < 0.001	*h* = 0.42, *Power* = 0.999995
New Zealand (FB = 11, TP = 288, *p* = 0.0382) ***vs.*** **West Indies** (FB = 49, TP = 340, *p* = 0.1441)	|D| = 0.110 *CI* = -0.149 through -0.063	*Z* = 4.50, *P* < 0.001	*h* = 0.39, *Power* = 0.999991

Comparisons between Test players who are fast bowlers from Test cricketing countries	Difference between proportions	*Z*-test outcome	Effect size and Power
Pakistan (FB = 12, TP = 257, *p* = 0.0467) ***vs.*** **West Indies** (FB = 49, TP = 340, *p* = 0.1441)	|D| = 0.097 *CI* = -0.143 through -0.052	*Z* = 3.89, *P* < 0.001	*h* = 0.34, *Power* = 0.999978
Sri Lanka (FB = 3, TP = 167, *p* = 0.0180) ***vs.*** **West Indies** (FB = 49, TP = 340, *p* = 0.1441)	|D| = 0.130 *CI* = -0.169 through -0.084	*Z* = 4.40, *P* < 0.001	*h* = 0.51, *Power* = 0.999568
West Indies (FB = 49, TP = 340, *p* = 0.1441) ***vs.*** **Zimbabwe** (FB = 1, TP = 132, *p* = 0.0076)	|D| = 0.140 *CI* = 0.096 through 0.177	*Z* = 4.33, *P* < 0.001	*h* = 0.60, *Power* = 0.998225

Key:
FB = fast bowlers; TP = Test players; *p* = proportion; |D| = absolute difference between the two proportions being analysed; *CI* = 95% confidence interval for the difference between the two proportions being analysed; *Z* = two-tailed proportion *Z*-statistic; *P* = level of statistical significance; *h* = Cohen's *h* as an index of the effect size; *Power* = statistical power for the outcome.

Racial thinking in cricket

Racial thinking is based on the flawed premise that humankind can be divided into 'Races' that have shared characteristics, and that a hierarchy of 'Races' exists (Collins 2022). It provides a platform for the expression of racism and leads to unequal power relations, inequity and discrimination. The crude stereotype of Black people as naturally talented at sport is well established (e.g., St Louis 2004). The "Black brawn vs. White brains" trope (Hughey and Goss 2015) has been rehearsed repeatedly (e.g., Kane 1971; Entine 2000) and has been linked to cricket. An article in *The Sunday Times* (27 April 1997) illustrated the racial thinking that had surfaced, and two influential former England men's team captains were quoted: "… it is a *fact* that a lot of the West Indians, because of their looseness, can usually bowl quicker than white people" (emphasis added); and "Black people are pretty loose they have loose limbs and can run up and bowl the ball at up to 100mph" (both cited in Malcolm 2001, 257).

The racial thinking that has become embedded in some cricket folklore is problematic for (at least) five important reasons. First, the biological concept of 'Race' has been discredited for over 50 years. 'Races' do not exist as homogeneous populations (UNESCO 1965), and the combined effect of globalisation, industrialisation, migration, as well as the impact of socio-political factors have made discrete racial categories impossible to define and verify (Spracklen 2008). As a result, it is impossible to categorise every person according to 'race' (Fuentes et al. 2019), and this in turn creates an insurmountable problem of operational definitions of 'races' for comparative analyses. In short, if 'races' cannot be defined satisfactorily, how can they be investigated properly?

Second, a corollary of the flawed concept of biological 'Race' has been the failure of research in sport and exercise (e.g., Abedelmalek et al. 2012) to provide the categorical criteria for inclusion and exclusion of individuals within 'Races'. Yet bold assertions about 'Races' provide the rationale for studies which then involve rigorous measurement and sophisticated analysis to create the veneer of methodological robustness. Nevertheless, whilst acknowledging the problematic nature of 'Races' and the risk of over-simplification as limitations, in a study of the uneven distribution of 'racial groups' in different playing roles (stacking) in élite men's domestic cricket in England, Malcolm (1997) presented an analysis based on differentiating between Black, White or Asian phenotypes – a framework consistent with earlier classifications of humankind (Tobias 1964/1972).

For the purpose of the present discussion, a similar approach is possible to the interpretation of fast bowlers in Test cricket. Based on archive photographs, phenotypes can be identified as solely Black from the West Indies, and solely White from Australia. Across the Indian sub-continent and Afghanistan, all fast bowlers can be identified phenotypically as Asian. As proxies for 'Race', in our data, there was a non-significant difference in the prevalence of fast bowlers between Black West Indians and White Australians (Z = 1.98, P = 0.047; |D| = 0.048, *CI* = -0.096 through -0.0003; h = 0.15). The mistaken conclusion about the prevalence of the former, that neglects the evidence of the latter, is therefore a version of the Texas sharpshooter fallacy (Thompson 2009) [4].

Third, there is confusion about fast bowling in relation to 'Race', and flawed logic about genetics. There are two accurate propositions: (i) phenotypic skin pigmentation is linked to

[4] Sometimes known as a *clustering illusion*, the Texas sharpshooter fallacy is an example of confirmation bias (Glick, 2017), in which data are sought or gathered to support a particular assumption ignoring contradictory evidence (Grufferman, 1998).

genetics (e.g., Pavan and Sturm 2019); and (ii) sports performance is also influenced by genetics (e.g., Pitsiladis et al. 2013). The mistaken inference is that skin pigmentation is therefore linked to sports performance. Specifically, the physical attributes associated with fast bowling include an individual's anthropometry, upper body muscularity, physiological response to cardiovascular exertion, and power (Johnstone et al. 2014), and are all influenced by genetics (Jacques et al. 2019). Through racial thinking, the link is then made to the empirical evidence of the number of Black fast bowlers, and the false conclusion that they are fast bowlers *because* they are Black. In reality, however, as Professor Yannis Pitsiladis has explained succinctly: "… it's the genes of your parents that dictate athletic ability … , not the genes associated with your skin colour" (Bloom 2024).

Fourth, an extension of the racial thinking about assumed genetic and biological advantages of Black fast bowlers is that there would not only be more of them, but that they would be the *fastest*. Instead, however, by the end of 2024, of the 10 fastest bowlers recorded, only two – ranked 6th and 7th – were Black West Indians (see Table 3). Moreover, if it is accepted that covariation is a necessary condition for a causal link, racial thinking would lead to the conclusion that the fastest bowlers should also be the '*Blackest*'. This is also unequivocally false.

Table 3: The ten fastest recorded bowlers in the history of men's cricket (to 31 December 2024)

Rank	Bowler	Country	Fastest delivery ($km \cdot h^{-1}$)	Year
1	Shoaib Akhtar	Pakistan	161.3	2003
2	Shaun Tait	Australia	161.1	2010
3	Brett Lee	Australia	160.8	2005
4	Jeff Thomson	Australia	160.6	1975
5	Mitchell Starc	Australia	160.4	2015
6	Andy Roberts	West Indies	159.5	1975
7	Fidel Edwards	West Indies	157.7	2003
8	Mitchell Johnson	Australia	156.8	2013
9	Mohammad Sami	Pakistan	156.4	2003
10	Shane Bond	New Zealand	156.4	2003

Source: Cricknerds.com (2024)

Fifth, racial thinking is also exposed in some of the current discourse about fast bowling on the Indian subcontinent: "150 kmph and counting: How does Pakistan keep producing fast bowlers on an assembly line?" (Dwivedi 2022) and "How does Pakistan produce *naturally* fast bowlers?" (Agrawal 2023 – emphasis added). A partial explanation is advanced in racial thinking – "Pakistan are a rugged species" (Frith 1986, 3), and "they come across as a tough race with an aggressive streak" (Chopra 2013). The evidence indicates that Pakistan does not produce proportionally more fast bowlers than any other country and produces fewer than the West Indies. Furthermore, given the shared history prior to partition in 1947, it would be absurd to suggest that Pakistanis were 'racially' different from Indians.

Conclusion

Linked closely to politics and nationhood (James 1963/2019), cricket has been "self-humanising" for Black people in the West Indies (Hector and Wagg 2005, 161). An important source of positive self-identity, it has also been an expression of national pride. Racial thinking generally, and specifically in relation to fast bowling, provides a false and pernicious explanation for sporting success, devalues the expression of ethnic identity, and undermines postcolonial national pride.

References

Abedelmalek, Salma, Hamdi Chtourou, Asma Aloui, Zouhair Tabka, and Nizar Souissi. 2012. "Racial Variation of Aerobic and Anaerobic Performances in Sedentary Men." *Open Journal of Internal Medicine* 2: 129-133. http://dx.doi.org/10.4236/ojim.2012.22023.

Agrawal, Anish. 2023. "How Does Pakistan Produce Naturally Fast Bowlers?" *CricNews,* July 17. https://cricnews.com/international-cricket/pakistans-legacy-of-producing-natural-fast-bowlers-continues-to-thrive/.

Banton, Michael. 2012. "The Colour Line and the Colour Scale in the Twentieth Century." *Ethnic and Racial Studies* 35 (7): 1109-31. https://doi.org/10.1080/01419870.2011.605902.

Birley, Derek. 2003. *A Social History of English Cricket*. Aurum.

Bloom, Ben. 2024. "Black, White and Shades of Grey - What's Behind Sprint's Race Divide?" *BBC Sport,* May 14. https://www.bbc.co.uk/sport/athletics/articles/cg39x2jg5pgo.

Chopra, Aakash. 2013. "How Do Pakistan Produce So Many Fast Bowlers?" *ESPNcricinfo,* February 25. https://www.espncricinfo.com/story/aakash-chopra-on-how-pakistan-produce-so-many-fast-bowlers-618185.

Cohen, Jacob. 1988. *Statistical Power Analysis for the Behavioral Sciences*. 2nd edition. Lawrence Earlbaum Associates.

Collins, Michael. 2022. "Cricket, Englishness and Racial Thinking." *The Political Quarterly* 93 (1): 95-103. https://doi.org/10.1111/1467-923X.13096.

Cricknerds.com (2024). "Top 10 Fastest Bowlers in Cricket History." https://cricnerds.com/featured/fastest-bowler-in-the-world/.

Dwivedi, Sandeep. 2022. "150 kmph and Counting: How Does Pakistan Keep Producing Fast Bowlers on an Assembly Line?" *The Indian Express*, January 6. https://indianexpress.com/article/sports/cricket/mohammad-hasnain-at-top-echelons-of-cricket-with-150-km-h-and-counting-5736404/.

Entine, Jon. 2000. *Taboo: Why Black Athletes Dominate Sports and Why We're Afraid to Talk About It*. Public Affairs.

ESPNcricinfo.com (2025). "Players." https://www.espncricinfo.com/cricketers.

Felton, P. J., S. McCaig, and M.A. King. 2023. "Cricket Fast Bowling: The Relationship Between Range of Motion and Key Performance and Injury Technique Characteristics." *Journal of Sports Sciences* 41 (2): 112-20. https://doi.org/10.1080/02640414.2023.2200520.

Frith, David. 1986. “Ironing Out an Evil.” *Wisden Cricket Monthly*, April.

Fuentes, Agustín, Rebecca R. Ackermann, Sheela Athreya, Deborah Bolnick, Tina Lasisi, Sang-Hee Lee, Shay-Akil McLean, and Robin Nelson. 2019. “AAPA Statement on Race and Racism.” *American Journal of Physical Anthropology* 169 (3): 400-2. http://doi.org/10.1002/ajpa.23882.

Glick, Michael. 2017. “Believing is Seeing – Confirmation Bias.” *Journal of the American Dental Association* 148 (3): 131-2. http://dx.doi.org/10.1016/j.adaj.2017.01.009.

Grufferman, S. 1998. “Methodologic Approaches to Studying Environmental Factors in Childhood Cancer.” *Environmental Health Perspectives* 106 (issue supplement 3): 881-886. https://doi.org/10.1289/ehp.98106881.

Hector, Tim, with Stephen Wagg. 2005. “One Eye on the Ball, One Eye on the World: Cricket, West Indian Nationalism and the Spirit of C.L.R. James.” In *Cricket and National Identity in the Postcolonial Age - Following On,* edited by Stephen Wagg. Routledge.

Hughey, Matthew W., and Devon R. Goss. 2015. “A Level Playing Field? Media Constructions of Athletics, Genetics, and Race.” *The Annals of the American Academy of Political and Social Science* 661 (1): 182-211. https://doi.org/10.1177/0002716215588067.

Jablonski, Nina G. 2020 “Skin Color and Race.” *American Journal of Physical Anthropology* 175 (2): 437-47. https://doi.org/10.1002/ajpa.24200.

Jacques, Macsue, Nir Eynon, and Erik D. Hanson. 2019. “Genetics and Sprint, Strength, and Power Performance: Candidate Gene Versus Genome-Wide Association Study Approaches.” In *Nutrition and Enhanced Sports Performance* (2nd edition), edited by Debasis Bagchi, Sreejayan Nair and Chandan K. Sen. Academic Press. https://doi.org/10.1016/B978-0-12-813922-6.00031-X.

James, Cyril L. R. 1963/2019. *Beyond a boundary*. Vintage Classics.

Johnstone, James A., Andrew C. S. Mitchell, Gerwyn Hughes, Tim Watson, Paul A. Ford, and Andrew T. Garrett. 2014. “The Athletic Profile of Fast Bowling in Cricket: A Review.” *Journal of Strength Conditioning Research* 28 (5): 1465-73. https://doi.org/10.1519/JSC.0b013e3182a20f8c.

Kane, Martin. 1971. “An Assessment of Black is Best.” *Sports Illustrated* 34 (3): 78-83. https://vault.si.com/vault/1971/01/18/an-assessment-of-black-is-best.

Levett, Geoffrey. 2017. “The ‘White Man’s Game’? West Indian Cricket Tours of the 1900s.” *International Journal of the History of Sport* 34 (7-8): 599-618. https://doi.org/10.1080/09523367.2017.1377184.

Maguire, Joe. 1991. “Sport, Racism and British Society: A Sociological Study of England’s Élite Male Afro-Caribbean Soccer and Rugby Union Players.” In *Sport, Racism and Ethnicity*, edited by Grant Jarvie. Falmer.

Malcolm, Dominic. 1997. “Stacking in Cricket: A Figurational Sociological Reappraisal of Centrality.” *Sociology of Sport Journal* 4 (3): 263-82. https://doi.org/10.1123/ssj.14.3.263.

Malcolm, Dominic. 2001. “‘It’s Not Cricket’: Colonial Legacies and Contemporary Inequalities.” *Journal of Historical Sociology* 14 (3): 253-75. https://doi.org/10.1111/1467-6443.00146.

Malcolm, Dominic. 2013. *Globalizing Cricket – Englishness, Empire and Identity*. Bloomsbury.

Newcombe, Robert G. 1998. “Interval Estimation for the Difference Between Independent Proportions: Comparison of Eleven Methods.” *Statistics in Medicine* 17: 873-90. https://doi.org/10.1002/(SICI)1097-0258(19980430)17:8<873::AID-SIM779>3.0.CO;2-I.

Nobis, Tina, and Felicia Lazaridou. 2023. “Racist Stacking in Professional Soccer in Germany.” *International Review for the Sociology of Sport* 58 (1): 23-42. https://doi.org/10.1177/10126902221081125.

Pavan, William J., and Richard A. Sturm. 2019. “The Genetics of Human Skin and Hair Pigmentation.” *Annual Review of Genomics and Human Genetics* 20: 41-72. https://doi.org/10.1146/annurev-genom-083118-015230.

Pitsiladis, Yannis, Guan Wang, Bernd Wolfarth, Robert Scott, Noriyuki Fuku, Eri Mikami, Zihong He, Carmen Fiuza-Luces, Nir Eynon, and Alejandro Lucia. 2013. “Genomics of Elite Sporting Performance: What Little We Know and Necessary Advances.” *British Journal of Sports Medicine* 47 (10): 656. https://doi.org/10.1136/bjsports-2013-092400.

Savidge, Michele, and Alastair McLennan. 1995. *Real Quick. A Celebration of the West Indies Pace Quartets*. Blandford.

Šidák, Zbyněk. 1967. “Rectangular Confidence Regions for the Means of Multivariate Normal Distributions.” *Journal of the American Statistical Association* 62 (318): 626-33. https://doi.org/10.2307/2283989.

Song, Seunghyun. 2017. “Bridging Epidermalization of Black Inferiority and the Racial Epidermal Schema: Internalizing Oppression to the Level of Possibilities.” *DiGeSt. Journal of Diversity and Gender Studies* 4 (1): 49-61. https://doi.org/10.11116/digest.4.1.3.

Spracklen, Karl. 2008. “The Holy Blood and the Holy Grail: Myths of Scientific Racism and the Pursuit of Excellence in Sport.” *Leisure Studies* 27 (2): 221-27. http://dx.doi.org/10.1080/02614360801902257.

St Louis, Brett. 2004. “Sport and Common-Sense Racial Science.” *Leisure Studies* 23 (1): 31-46. https://doi.org/10.1080/0261436042000182308.

Thompson, William C. 2009. “Painting the Target Around the Matching Profile: The Texas Sharpshooter Fallacy in Forensic DNA Interpretation.” *Law, Probability and Risk* 8 (3): 257−76. https://doi.org/10.1093/lpr/mgp013.

Tobias, Phillip V. 1964/1972. “The Meaning of Race.” In *Race and Social Difference*, edited by Paul Baxter and Basil Sansom. Penguin.

UNESCO. 1965. “Biological Aspects of Race – A Document of Paramount Importance.” *The UNESCO Courier*, April. https://unesdoc.unesco.org/ark:/48223/pf0000078423.

United Nations. 2024. Department of Economic and Social Affairs – Population Division. *World Population Prospects 2024*. https://population.un.org/wpp/.

Wade, Peter. 2012. “Skin Colour and Race as Analytic Concepts.” *Ethnic and Racial Studies* 35 (7): 1169-1173. https://doi.org/10.1080/01419870.2011.632428.

Williams, Jack. 2001. *Cricket and Race*. Berg.