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Disability, spinal cord injury and strength and conditioning: Sociological considerations.

Strength and Conditioning Journal Special Edition: Psychology and Sociocultural Aspects of Strength & Conditioning (S&C)

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Abstract:

Little knowledge is available for strength and conditioning coaches' (SCCs) to develop strength and conditioning (S&C) programmes with athletes with a disability. Knowledge that is available is 'bioscientific' with scant consideration of how dominant understandings of disability are constructed or how disability is experienced. In response, this paper provides a conceptual overview of disability and reflections from the authors published research into disability sport and spinal cord injury (SCI) to question the tacit knowledge used in S&C and the influence this has on SCC/athlete relationships. Guidelines to develop more reciprocal and empowering practices with athletes with a disability are advocated.

Keywords: Disability; Spinal Cord Injury; Sociology

Introduction

The sociological analysis of strength and conditioning (S&C) holds considerable importance in questioning the taken for granted knowledge which underpins the discipline. According to Mills and Gearity (44), engagement in social theory develops strength and conditioning coaches (SCCs) means for critical reflection, assisting in the effective prescription, implementation and development of S&C programmes and the social interactions SCCs have with athletes, coach educators and policy makers. As part of this sociological approach, further attention to socially differentiating identities such as sex, race, and class is required in order to critique how particular forms of knowledge are constructed and applied in S&C (44).

In this paper reflections are offered from the authors experiences of researching physical disability, specifically athletes with acquired spinal cord injury (SCI) who participate in wheelchair basketball and rugby (9, 10). In doing so, the 'bioscientific' and 'functionalist' knowledge (44) that has previously figured centrally in societal understandings of disability is

challenged, and assumptions surrounding conventional S&C methods and outcomes with athletes with a disability are nuanced.

Firstly, attention is drawn to the resources currently available for SCCs working with athletes with SCI and some of the limitations of operating exclusively within narrow bioscientific paradigms. In response, an overview of the dominant 'models' through which disability has been conceptualized is provided along with a discussion on how these understandings are experienced and challenged by athletes with SCI. Finally, suggestions for how SCCs may critically reflect on how social knowledge informs their practices are considered and practical guidelines for developing S&C practices with athletes with SCI forwarded.

Current research into S&C practices with athletes with SCI

There is a dearth of empirical research for SCCs to draw upon to assist their planning, implementation, and evaluation of effective S&C programmes when working with athletes with SCI (4, 71). This seems erroneous given that experiential research has indicated that following effective S&C programming improvements in strength (28, 30, 71) and pulmonary function (45) and reductions in body fat (20, 30) and pain (46) are observed. In spite of this lack, guidelines for SCCs working with athletes with SCI have been offered as outlined in Table 1:

Table 1: Unique considerations and responses for SCCs working with athletes with SCI

(Insert Table 1 here)

References: (4, 28, 30, 34, 35, 37, 45, 46)

These guidelines offer valuable contributions in assisting SCCs work with athletes with SCI. However, there is significant room for further development, particularly through acknowledging psycho-social paradigms of knowledge. Such analysis will help illuminate

how dominant societal constructions of disability influence S&C practices and SCC/athlete relationships. This is now demonstrated through summarizing the 'models' through which disability has been conceptualized in contemporary society and the negative assumptions and problems associated with them.

Conceptualizing disability

Disability is a contested concept that has social, psychological, biological, historical and political dimensions (26). Resultantly, a number of 'models' have been theorized which seek to explain how disability is understood and experienced. These models and their influence on S&C practices are outlined below:

The 'medical' model: Historically, disability and impairment have been understood through 'bioscientific' knowledge (6, 68). Under these forms of medicalized knowledge, people with a disability are labelled 'different', their condition deemed tragic and impairment as a biological abnormality that needs to be 'fixed' in order to return the body to 'normality' (6, 48). Such conceptualizations have resulted in people with a disability being 'othered' and subject to multiple forms of oppression in society (26, 48, 57). This extends to sport where material, psychological, and cultural barriers exist including a lack of access to organized programs (7), a lack of facilities (40, 53) and coaches (13, 62, 69) and limited informal early experiences (19). Within sports perfecting structures, athletes with a disability have often been deemed as biologically 'imperfect' (18, 61) and elite disability sport, until recently, being deemed irrelevant (8, 33, 50, 51).

Negative, medical and individual understandings of disability are evident in S&C practices by athletes with a disability being positioned as having 'problems' to overcome and an excessive focus on impairment rather than addressing questions of how to coach (69). This can be seen in the implementation and design of S&C programs for athletes with SCI emphasising participant safety, the health benefits of exercise and the restitution of a 'normal', balanced, and symmetrical body. As a result of these understandings, athletes with

SCI risk having their ambitions belittled and their position in elite sport infantilized by assuming that that rigorous physical activity is more dangerous for them than athletes without a disability (9). Although SCCs should be aware of specific safety considerations and unique impairments, this does not mean that athletes with SCI should be prohibited from being pushed to reach the extent of their physical capabilities or restricted in the exercises they perform.

The 'social' model: A transformative approach to addressing the oppression experienced by people with a disability is placing the 'problem' not with the individual but as a result of social arrangements (23). The 'social model' reframes disability as a social construction, switching emphasis onto uncovering the structural (e.g. facilities), societal (e.g. stereotyping and fear), and material (e.g. economic) barriers facing people with a disability in society (6, 47, 48). This approach has helped identify the physical barriers and the unsuitability of equipment in gym and fitness facilities (40, 52, 53) and the lack of assistance offered by some gym instructors to individuals with a disability (55, 70). Although useful in developing a political dimension to disability movements, the social model has been criticized for homogenizing people with a disability and ignoring embodied, emotive and psychological experience (14, 60, 57, 65-68). The social model therefore helps to identify barriers, but it does not account for the individual needs, experiences and emotions of athletes with a disability in the development and implementation of S&C programs.

The 'social relational' model: Given that both the 'medical' and 'social' model explain disability in a universal way and exclude important dimensions of people's lives and the knowledge they hold of the world, a 'social relational' model of disability has been advocated (65-68). This approach acknowledges that disability is lived and experienced through the body, but is also socially constructed and culturally located (60). Here, disability is understood through the relational practices disabled people encounter, and how these experiences shape meanings of the world (69). As part of this approach, the psycho-emotional effects of impairment, or '*impairment effects*' acknowledge the restrictions

imposed upon persons with disabilities activities and behaviors that are directly attributable to the nature of an individual's impairment (65, 68). Social barriers therefore place limits on what people with a disability *can do* (structure) but impairment effects place limitations on who people with a disability *can be* (agency) (60, 69).

Currently, impairment effects are not adequately considered in S&C research into athletes with a disability. Psychological and emotional responses in S&C settings however are present in for example i) the creation and placement of denigrating symbols and images (e.g. instructional diagrams of people without a disability on resistance machines), ii) the emotional trauma of making multiple transitions between wheelchair and equipment (34-37) and, iii) unintended hurtful words and actions made by SCCs interactions with athletes with a disability. These impairment effects can cause much emotional distress leaving athletes with a disability feeling worthless, burdensome, othered and unwelcome in S&C settings (52).

The 'supercrip' model: Constructed through media representations of elite disabled athletes, a 'supercrip' model of disability has recently proliferated. This model implies that with hard work, courage and determination an individual can heroically overcome the tragedy of their disability and demonstrate abilities beyond that which is commonly expected of a person with a disability (8, 29). In doing so, supercrips are seen as succeeding against the odds and able to live a 'normal' life (31, 56, 58). Although the disabled superhero may be moving for the able-bodied majority and seem alluring for many athletes with disabilities to aspire to, it reinforces many negative, medical, tragic understandings of disability by promoting human interest story (i.e. pity) over athletic achievement (50). As a result, athletes with disabilities are seen as inspirational tropes salvaged from their impairment while their sporting accomplishments are belittled and trivialized (29, 55). The supercrip model also feeds the illusion that athlete lives can be controlled by human agency (58, 73) which may foster unrealistic expectations of achievement. SCCs may therefore be required to manage, mediate and rearticulate athletes with disabilities expectations in relation to the supercrip narrative.

Athletes with SCI and challenging knowledge of S&C

Against this conceptual backdrop, it can be suggested that if SCCs practices are exclusively informed by bioscientific knowledge and exclude athletes with an SCI in program construction they risk i) reproducing negative understandings of disability ii) developing normative assumptions about athlete's needs and capabilities, iii) restricting the potential for athletes to demonstrate a sense of agency and ownership over S&C programming, and iv) further athletes feelings of rejection and otherness. This is now briefly illustrated by drawing on the author's experiences of researching athletes with SCI.

Adapting to able-bodied environments: After acquiring SCI, individuals will spend an extended period of time in a specialist spinal rehabilitation unit where there is a focus on a return to a 'normal' looking and performing body that is deemed economically independent (9, 42). This process takes place in specially designed facilities for people with newly acquired SCI. Having left rehabilitation centres however, individuals are often faced with navigating mainstream training environments (e.g. gyms) and equipment (e.g. resistance machines) designed for able-bodied people (36).

In research carried out by the author (9, 63) it was demonstrated that athletes with newly acquired SCI attempt to adapt to mainstream training environments by learning from experienced athletes with SCI and working with progressive and innovative SCC's. With appropriate guidance, newly impaired athletes were able to learn practical techniques such as i) attaching a golf ball to the end of a rope to throw over the fixed lateral pull down bar to use while in a wheelchair, ii) teaching strapping techniques and the use of Velcro © and adhesives to assist impaired grip in hands, iii) providing alternative ways of transitioning in and out of chairs to use equipment, iv) making use of a partner to assist these transitions. Although such adaptive practices enhanced inclusion, they continue to raise the inherent obstacles athletes with SCI encounter in S&C environments and associated impairment effects and feelings of otherness.

S&C and reproduction of the medical model: Research undertaken by the author has revealed that if exclusively constructed through bioscientific and functionalist knowledge, S&C programs risk perpetuating dominant medical understandings of disability (9, 63). This is evident in i) an overemphasis on addressing muscular imbalances and maintaining focus on a return to a 'normal' looking and functioning body as opposed to developing muscular functioning bespoke for sports performance, ii) programming assuming a state of linear improvement to a fixed end goal without accounting for individual and/or degenerative impairments, iii) little consideration of the embodied (e.g. fatigue, pain) emotive (e.g. depression) and psychological (e.g. motivational) responses to S&C, and iv) excluding the needs or wishes of athletes themselves. As will now be illustrated however, athletes with SCI are not always 'docile' (25) to medical understandings of their bodies in rehabilitative or S&C programs but are able to offer challenges to these normative disciplinary regimes.

Classification in disability sport and implications for SCCs: Physical disability is a complex phenomenon and individuals will have unique capabilities as a result of their specific impairment. Therefore, in order to attempt fair and equitable competition, many disability sports have developed systems of 'classification' that attempt to place athletes with a disability at an appropriate level of performance (27, 32, 38, 72). Here, the athlete's level of functionality is assessed under a multitude of physiological tests and assigned a category of competition or a 'class'¹. For example, in wheelchair rugby, players are assigned one of seven classes ranging from 0.5 (lowest function) to 3.5 (highest function) with the total number of points on court at any one time not exceeding 8. Classification is problematic however as it attempts to homogenize inherently heterogeneously impaired bodies placing limitations on athletes in terms of what sports they may be successful in (51), their position and the influence they have on the outcome of games (9).

Classification poses various considerations for SCCs when working with athletes with SCI including a requirement for knowledge on i) classification history, ii) current level of

classification, and iii) alterations to class as a result of engagement in an S&C program. For many athletes, a change in class is likely to influence their success, selection and funding. SCCs should also be attuned to athlete's emotive and psychological responses to the quantification of the functionality of bodies through employing scientific rationale (69), and the perceived injustices and feelings of helplessness of competing against less severely impaired athletes in some sports. This can be seen in the following example, where an SCC was asked to 'negatively condition' an athlete with SCI.

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'Negative' conditioning: In research conducted by the author (9) a wheelchair rugby player with acquired SCI who had engaged in S&C programs for four years had experienced gradual improvements in functionality (strength and mobility). However, at a recent classification reassessment (www.paralympic.org/classification/2015-athlete-classification-code), he was moved 'up' a level from a 1 to a 1.5 point class threatening his 'court time' and selection for his club and national team. In response, the athlete asked the SCC to adapt S&C programming in order to become less functional (in normative terms) in order to move back down to his original classification level. Appreciating that doing so would maximize the athletes potential in disability sport under given classification systems, the SCC agreed to engage in a period of negative conditioning by developing a routine of static, isometric muscular movements that limit mobility so the athlete remained within the boundaries of his original banding.

This example ~~can be is-unsettling for some SCCs who assume where~~ linear improvements in strength and mobility ~~are assumed when working with able-bodied athletes with the presupposition that there is and~~ a standardized and 'normal' body ~~that we should exclusively~~ aspired to. In destabilizing this normative, progressive model in favor of what would be deemed a regressive model in order to manipulate classification, various dilemmas are presented for SCCs that question functionalist knowledge: Should S&C be provided to assist an athlete remain in classification banding? Is S&C about enhancing/restoring physical capabilities or preparedness for a particular body/sport? Is the athlete demonstrating agency

through contesting medical ideologies of functionality or are they restricting the achievement of their full physical capabilities?

The answers to these questions should be empathetic to the needs of the athlete themselves and acknowledge that elite disability sport is not about rehabilitation and being 'normal' but developing a unique body with specific requirements within classification structures, with the overall goal being successful sporting performance. Having reflected on how dominant forms of knowledge in S&C have been challenged by athletes with SCI, guidelines for SCCs working with athletes with disability are now offered.

Guidance for SCCs working with athletes with a disability

This paper has demonstrated how challenging the ubiquitous use of bioscientific and functionalist knowledge in S&C can help SCCs avoid the reproduction of negative conceptualisations of disability. With this in mind, the following guidelines for SCCs working with athletes with disability are forwarded in order to invite SCCs to engage in critical reflection and develop ~~their~~ practices:

Develop a theoretical understanding of disability: Given that much S&C research is positivistic and conducted in laboratory or applied settings, there is little recognition of the thoughts, values and emotions of athletes. Without consideration of social or psycho-social knowledge therefore, SCCs may not be adequately prepared to develop theoretical or practical understandings of coaching athletes with disabilities. In recognizing disability as a socially constructed identity category however, this paper has illustrated the need for SCCs to develop a deeper understanding of disability beyond knowledge of biological impairment. Awareness of more transformative 'models' for understanding disability will help develop S&C practices and pedagogies to be more inclusive and innovative, reduce oppression and assist coach education by moving away from homogenizing the needs and experiences of athletes with a disability and grouping 'them' as a special population.

The usefulness of theoretical consciousness can also be observed in how coaching practices are developed with other underrepresented groups in sports coaching. Given that coaching is predominantly an able-bodied, white, male profession (2, 39), research has previously acknowledged the attitudes, ethics and power relationships at play in the interactions between male coaches coaching female athletes (12, 16, 21, 22), and the stereotyping, oppression and exploitation endured by black athletes by mainly white coaches (1, 5, 11, 41, 54). Just as further understandings of feminist theory in cross gender coaching and critical race theory in transracial coaching has helped challenge masculine, authoritarian, majority white pedagogies, an appreciation of disability theory can assist SCCs in their practices with athletes with a disability. In doing so, pedagogical 'obstacles' such a lack of understanding or how to communicate with athletes with a socially differentiating identity category may be reframed as challenges for the discipline of S&C to address, rather than situate individuals as 'other' to the young, male, white, able-bodied norm.

Develop S&C programs with athletes with a disability: Historically, much disability research and policy development has excluded people with disabilities themselves (26, 43, 49). Resultantly, calls have been made for researchers, educators, policy makers and practitioners to operate within an emancipatory politics which advocates working *with* people with a disability *for* people with a disability (43, 47, 49). SCCs therefore have responsibility to work collaboratively with their athletes and develop S&C programs bespoke to the needs and wishes athletes themselves. This requires building open and reciprocal relationships with athletes and challenging previous constructions of knowledge about the practices and goals of S&C. Developing such knowledge with athletes with [disabilitySCI](#) provides opportunity for agency while also revealing unexpected barriers to success.

In order to facilitate this approach, SCCs could reverse roles as the 'expert' (3) and seek to learn from the athlete as part co-constructing S&C practices and programs. Questions could be asked such as: What barriers do you face in achieving your S&C goals? What experiences of oppression do you encounter in S&C as a result of your disability? How can

these be addressed in helping you reach your S&C goals? Listening to these answers and challenging bioscientific knowledge holds potential to open up discourses of performance enhancement that may more appropriately frame athletes with a disability as superhuman (31, 64), by developing a 'non-normative' performing body effective for the unique requirements of a given disability sport. SCCs knowledge in relation to disability should therefore be co-constructed with athletes with a disability themselves, not to be used on them.

Be empathetic, not sympathetic: SCCs should be empathetic to athletes with disabilities specific needs by making attempt to position themselves in the place of the other and foster compassion (59). This will prevent ~~SCCs projecting their own~~ the projection of (often-able-bodied) knowledge onto athletes with disability and help and focus on ~~developing~~ S&C practices with the interests of the athlete in mind. Such an approach should not be confused with being sympathetic thereby reproducing notions of pity central in the medical and supercrip models. Part of being empathetic is developing impairment specific knowledge and an awareness of associated medical risks but not focusing on them at the expense of i) unnecessarily reducing training intensity, ii) developing pedagogical practices, and iii) fostering fun, pleasure, enjoyment, and a sense of community (74).

Being empathetic also involves carefully planning and implementing S&C programs in order to avoid psychological and emotional impairment effects, for example, by minimizing transitions between wheelchair and fixed resistance machines (4, 28, 34, 35). In addition to talking to their athletes about their experiences and meanings they hold of S&C, able-bodied SCCs may take measures to develop empathy by 'doing' disability and experiencing disabling barriers and being subject of the judging 'non-disabled gaze' (24). By undertaking an S&C session as a wheelchair user for example, able-bodied SCCs may acquire corporeal knowledge on inhabiting a lower perspective, the challenges of adapting specific exercises and equipment, and the added complexity of using hands for locomotion as well as the psychological and emotional impact of being disabled within multiple social spaces (9).

Practical implications for SCC's working with athletes with SCI

Having highlighted how disability can be conceptualized and guidelines offered to assist SCCs in their engagement with athletes with a disability, Table 2 demonstrates how socially informed knowledge can illuminate the assumptions and problems of given practices, helping SCCs critically reflect and develop new applied practices when working with athletes with a disability:

Table 2: Re-thinking S&C practices when working with athletes with disability: Practical applications

(Insert Table 2 here)

References: (17, 36, 51, 69)

These suggestions for applied practice help SCCs develop a deeper understanding of *why* practices should be developed, not just *how* they can be implemented. They also raise some of the complexities and contradictions in [S&C SCC](#) with athletes with a disability. For example, although SCC's should be considerate of an athlete's desire to develop effective sporting bodies which may be deemed asymmetrical, they should also be aware that long term muscular imbalance is likely to result in future pain and degenerative conditions and should seek to manage these expectations throughout the course of an athletic career.

Furthermore, although these practical applications contribute to realizing Jacobs' (36) concept of '*Inclusive Fitness*' in which exercise activities, not disabilities are of central importance, there is still currently a requirement for athletes with disabilities to adjust to able-bodied environments (e.g. by using adaptive equipment such as straps and bands) as these are the facilities currently available. In the future, athletes with a disability should be able to train in mainstream fitness spaces without being restricted by social, material or environmental barriers or subjected to negative, medical, supercrip ideologies.

Summary

This paper has exposed the lack of empirical research available for SCCs to draw upon when working with athletes with SCI and demonstrated how progressing S&C practices exclusively through bioscientific and functionalist knowledge risks reproducing many negative, medical understandings of disability. In illuminating how disability is understood and experienced in S&C settings however, the knowledge through which S&C programs are commonly planned, implemented and evaluated with athletes with SCI has been questioned. In considering alternative forms of knowledge, SCCs may become more conscious of how they come to know disability, ~~and~~ the impact this has on their practices and how they may empower their athletes.

In the future, SCC's may help reduce the barriers and oppression athletes with disability SCI experience by challenging assumptions that there is a standardized and 'normal' body that is achievable and should be aspired to. Guidance has been provided as to how this might be developed through taking a collaborative and empathetic approach with athletes SCI and how this co-constructed knowledge can assist in the development of inclusive practice. Indeed, SCCs have a responsibility to drive S&C for athletes with a disability forward (34). Many coaches are already engaging in inclusive, innovative, progressive and transformative practices with athletes with a disability (15) and should be encouraged and supported to share their experiences in relation to theoretical perspectives outlined here. Currently, there are is no in-depth qualitative studies research available on exploring SCCs experiences and perspectives of working with athletes with a disability. Engaging in such investigations are however are vital in ~~will further~~ developing knowledge, educational resources and the development of future policy.

Although SCI has been the focus of this paper, the needs of athletes with alternative physical (e.g., cerebral palsy, spina bifida), sensorial (e.g. deaf, blind) and intellectual (e.g. autism) impairments across multiple disability sports require consideration. should be explored. Further sociological research that explores the subjective experiences of athlete's with disability in S&C settings is also necessary.required. Part of this research should

explore the barriers SCCs with a disability face in entering the profession. Within these explorations, disability should be theorized as heterogeneous, embodied, psychological and emotional, but not a negative identity category to be understood through biomedical and functionalist forms of knowledge. Finally, athletes and SCCs identities should not be seen as constructed through a series of binaries (e.g. able-bodied/disabled; male/female, white/non-white) but as multiple intersecting dimensions which require unique considerations for effective S&C.

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References

1. Abney, R. African American women in intercollegiate coaching and athletic administration: Unequal access. In: *Diversity and social justice in college sports: Sport management and the student athlete*. Brooks, D, and Althouse, R. eds. Morgantown, WV: Fitness Information Technology, 51-76, 2007.
2. Acosta, V.R. and Carpenter, L.J. Women in intercollegiate sport: A longitudinal, national study thirty-five year update, 1977-2012, 2012 [online available at www.acostacarpenter.org]
3. Agar, M, H. *The Professional Stranger: An Informal Introduction to Ethnography*. 2nd ed. NY: Academic Press, 1996.
4. Allford, A. and Mitchell-Norfolk, L. Strength and conditioning for wheelchair sport. In: *Wheelchair Sport: A complete guide for athletes, coaches and teachers*. Goosey-Tolfrey, V, ed. Champaign, IL: Human Kinetics, 63-74, 2010.
5. Anshel, M. H. and Sailes, G. A. Discrepant attitudes of intercollegiate athletes as a function of race. *J Sport Behav*, 13: 87-102, 1990.
6. Barnes, C. and Mercer, G. *Exploring the divide: Illness and disability*. Leeds: Disability Press, 1996.
7. Berger, R. Pushing forward: disability, basketball and me. *Qual Inquiry*, 10 (5): 794-810, 2004.

8. Berger, R. *Hoop Dreams on Wheels: Disability and the Competitive Wheelchair Athlete*. New York: Routledge, 2009.
9. Brighton, J. Narratives of spinal cord injury and the sporting body: An ethnographic study. *Unpublished PhD Thesis*. Leeds Beckett University, 2014.
10. Brighton, J. Researching disabled sporting bodies: Reflections from an 'able'-bodied ethnographer. In: *Embodied Research in Sport*. Wellard, I, ed. London: Routledge, 163-177, 2015.
11. Brown, T. N., Jackson, J.S., Brown, K.Y., Sellers, R.M., Keiper, S. and Manuel, W.J. "There's no race on the playing field" Perceptions of Racial Discrimination Among White and Black Athletes. *J Sport Soc Issues*, 27 (2): 162-183, 2003.
12. Burke, M. Males coaching female athletes. In: *The Ethics of Sports Coaching*. Hardman, A, R, and Jones, C, eds. Oxon: Routledge, 116-134, 2010.
13. Burkett, B. Coaching athletes with a disability. In: *Routledge Handbook of Sports Coaching*. Potrac, P, Gilbert, W, and Denison, J, eds. London: Routledge, 196-209, 2013.
14. Corker, M. and Shakespeare, T. Mapping the terrain. In: *Disability/Postmodernity: Embodying Disability Theory*. Corker, M, and Shakespeare, T, eds. London: Continuum, 1-17, 2002.
15. Cregan, K., Bloom, G.A. and Reid, G. Career evolution and knowledge of elite coaches of swimmers with a physical disability. *Res Quart Exerc Sport*, 78: 339-350, 2007.
16. Cunningham, G.B. and Sagas, M. Access discrimination in intercollegiate athletics. *J Sport Soc Issues*, 29 (2): 148-163, 2005.
17. Department of Justice. *The 2010 ADA Standards for Accessible Design*. Washington, DC: U.S. Department of Justice, 2010.
18. DePauw, K. P. The (in)visibility of disability: cultural contexts and 'sporting bodies'. *Quest*, 59 (4): 416-430, 1997.
19. DePauw, K.P. & Gavron, S.J. *Disability Sport. 2nd ed*. Champaign, IL: Human Kinetics, 2005.
20. D'Oliveira, G, L, C, Figueiredo, F, A, Passos, M, C, F, Chain, A, Bezerra, F, F, and Koury, J, C, Physical exercise is associated with better fat mass distribution and lower insulin resistance in spinal cord injured individuals. *J Spinal Cord Med*, 37 (1), 79-84, 2014.
21. Fasting, K, Dangerous liaisons: Harassment and abuse in coaching. In: *Routledge Handbook of Sports Coaching*. Potrac, P, Gilbert, W, and Denison, J, eds. London: Routledge, 333-344, 2013.

22. Fasting, K. and Pfister, G. Female and male coaches in the eyes of female elite soccer players. *Europ Phys Ed Review*, 6 (1): 91-110, 2000.
23. Finkelstein, V. *Attitudes and disabled people: Issues for discussion*. New York: World Rehabilitation Fund, 1980.
24. Garland-Thomson, R. *Staring: How We Look*. New York: Oxford University Press, 2009.
25. Gearity, B, T, and Mills, J, P. Discipline and punish in the weight room. *Sports Coach Rev*, 1(2): 124-134, 2012.
26. Goodley, D. *Disability Studies: An Interdisciplinary Introduction*. London: Sage, 2011.
27. Goosey-Tolfrey, V. ed. *Wheelchair Sport: A complete guide for athletes, coaches and teachers*. Champaign, IL: Human Kinetics, 2010.
28. Gulick, D, Berge, B, Borger A, Edwards, J, and Rigterink, J. Quad Rugby: A strength and conditioning program for the elite athlete. *Strength Cond J* 28 (4): 10-18, 2006.
29. Hardin, M, and Hardin, B. The 'supercrip' in sport media: Wheelchair athletes discuss hegemony's disabled hero. *Soc Sport Online*, 7(1): 2004.
30. Hicks, A, L, Martin-Ginis, K, A, Pelletier, C, A, Ditor, D, S, Foulon, B, and Wolfe, D.L. The effects of exercise training on physical capacity, strength, body composition and functional performance among adults with spinal cord injury: a systematic review. *Spinal Cord*, 49: 1103-1127, 2011.
31. Howe, P.D. Cyborg and supercrip: The Paralympics, technology and the (dis) empowerment of disabled athletes. *Sociology*, 45 (5): 868- 882, 2011.
32. Howe, P, D, and Jones, C. Classification of disabled athletes: (dis)empowering the Paralympic practice community. *Soc Sport J*, 23 (1): 29-46, 2006.
33. Huang, C, J, and Brittain, I. Negotiating identities through disability sport. *Soc Sport J*, 23 (4): 352-375, 2006.
34. Jarvis, J. and Moody, J. *Working with special populations*. In: *Strength and Conditioning for Sports Performance*. Jeffreys, I, and Moody, J. eds. Oxford & New York: Routledge, 2016.
35. Jacobs, P, L, and Nash, M, S. Exercise recommendations for individuals with spinal cord injury. *J Sports Med*, 34 (11): 727-751, 2004.
36. Jacobs, P.L. ed. *NSCA's Essentials of Training Special Populations*. Champaign, IL: Human Kinetics, 1-14, 2017.
37. Jacobs, P, L, Svobda, S, M, and Lepeley, A. Neuromuscular Conditions and Disorders. In: *NSCA's Essentials of Training Special Populations*. Jacobs, P, L. ed. Champaign, IL: Human Kinetics, 267-318, 2017.
38. Jones, C, and Howe, P, D. The conceptual boundaries of sport for the disabled: Classification and athletic performance. *J Phil Sport*, 32 (2): 133-146, 2005

39. Kamphoff, C, and Gill, D. Issues of exclusion and discrimination in the coaching profession. In: *Routledge Handbook of Sports Coaching*. Potrac, P, Gilbert, W, and Denison, J. eds. London: Routledge, 52-66, 2013.
40. Kehn, M. and Kroll, T. Staying physically active after spinal cord injury: a qualitative exploration of barriers and facilitators to exercise participation. *BMC Public Health*, 9,168-179, 2009.
41. Lapchick, R, E, Bartter, J, Diaz-Calderon, A, Hanson, J, Harless, C, Johnson, W, Kamke, C, Lopresti, C, McMechan, D, Rshard, N. and Turner, A. 2009 *Racial and Gender Report Card*, online, 2009 [available at: <http://www.tidesport.org/reports.html>]
42. Mason, F. From Rehabilitating patients to rehabilitating athletes: Searching for a history of sports medicine for athletes with disabilities. In: *The Social Organisation of Sports Medicine: Critical Socio-cultural Perspectives*. Malcolm, D. and Safai, P. eds. London: Routledge, 77-104, 2012.
43. Mercer, G. Emancipatory Disability Research. In: *Disability Studies Today*. Barnes, C., Oliver, M. and Barton, L. eds. Cambridge: Polity Press, 228-249, 2002.
44. Mills, J.P. and Gearity, B. Towards a sociology of strength and conditioning coaching. *Strength Cond J*, 38 (3): 102-105, 2016.
45. Moreno, M, A, Paris, J, V, Sarro, K, J, Lodovico, A, Silvatti, and Barros, R, M, L. Wheelchair rugby improves pulmonary function in people with tetraplegia after 1 year of training. *J Strength Cond Res*, 27 (1): 50-56, 2013.
46. Norrbrink, C, Lindberg, T, Wahman, K, and Bjerkefors. Effects of an exercise programme on musculoskeletal and neuropathic pain after spinal cord injury-results from a seated double-pole ergometer study. *Spinal Cord*, 50: 457-461, 2012.
47. Oliver, M. Changing the social relations of research production. *Dis, Handicap Soc* 7(2): 101-114, 1992.
48. Oliver, M. *Understanding Disability: From Theory to Practice*. Basingstoke: Macmillan, 1996.
49. Oliver, M. Emancipatory research: Realistic goal or impossible dream. In: *Doing Disability Research*. Barnes, C, and Mercer, G. eds. Leeds: The Disability Press, 15-31, 1997.
50. Peers, D. (Dis)empowering paralympic histories: absent athletes and disabling discourses. *Dis Soc*, 24 (5): 653-665, 2009.
51. Purdue, D, E, J, and Howe, P, D. Who's in and who's out? Legitimate bodies within the Paralympic games. *Soc Sport J*, 30(1): 24-40, 2013.
52. Richardson, E, V, Smith, B, and Papatomas, A. Disability and the gym: Experiences, barriers and facilitators of gym use for individuals with physical disabilities. *Dis Rehab*, 1-8, 2016.

53. Rimmer, J, H, Riley, B, Wang, E, Rauworth, A, and Jurkowski, J. Physical activity participation among persons with disabilities: barriers and facilitators. *Am J Prev Med*, 26: 419-425, 2004.
54. Sartone, M, L, and Cunningham, G, B. Stereotypes, race and coaching. *J African Am Studies*, 10 (2): 69-83, 2006.
55. Schalk, S. Reevaluating the Supercrip. *J Lit Cultural Dis Studies*, 10(1): 71-86, 2016.
56. Schell, L, A, and Rodriguez, S. Subverting bodies/ambivalent representations: media analysis of Paralympian, Hope Lewellen. *Soc Sport*, 18 (1): 127-135, 2001.
57. Shakespeare, T. *Disability Rights and Wrongs*. London: Routledge, 2006.
58. Silva, C, F, and Howe, P, D. The (in)validity of supercrip representation of Paralympian athletes. *J Sport Soc Issues*, 36(2): 174-194, 2012.
59. Smith, B. Imagining being disabled through playing sport: the body and alterity as limits to imagining others' lives. *Sport, Ethics Phil*, 2 (2): 142-157, 2008.
60. Smith, B, and Perrier, M, J. Disability, sport and impaired bodies: A critical approach. In: *The psychology of sub-culture in sport and physical activity: A critical approach*. Schinke, R. and McGannon, K, R. eds. London: Psychology Press, 95-106, 2014.
61. Smith, B. and Sparkes, A.C. Disability, sport and physical activity: A critical review. In: *Routledge Handbook of Disability Studies*. Watson, N, Roulstone, A, and Thomas, C. eds. London: Routledge, 336-347. 2012.
62. Smith, A, and Thomas, N. *Disability, Sport and Society: An Introduction*. London: Routledge, 2009.
63. Sparkes, A, C, Brighton, J, and Inckle, K. Imperfect perfection and wheelchair bodybuilding: Challenging ableism or reproducing normalcy? *Sociology* [online first: <https://doi.org/10.1177/0038038517737476>], 2017.
64. Sparkes, A, C, Brighton, J, and Inckle, K. "It's part of me": An ethnographic exploration of becoming a disabled sporting cyborg following spinal cord injury. *Qual Res Sport, Exerc Health* 10 (2): 151-166, 2018.
65. Thomas, C. *Female forms: Experiencing and Understanding Disability*. Buckingham: Open University Press, 1999.
66. Thomas, C. The 'disabled' body. In: *Real Bodies*. Evans, M, and Lee, E. eds. Basingstoke: Palgrave MacMillan, 64-78, 2002.
67. Thomas, C. Rescuing a social relational model of disability. *Scand J Dis Res* 6: 22-36, 2004.
68. Thomas, C. *Sociologies of Disability, 'Impairment', and Chronic Illness: Ideas in Disability Studies and Medical Sociology*. London: Palgrave MacMillan, 2007.
69. Townsend, R, Smith, B, and Cushion, C. Disability sports coaching: Towards a critical understanding. *Sports Coach Rev* 4(2): 80-98, 2016.

70. Tragaskis, C. *Constructions of disability: Researching the interface between disabled and non-disabled people*. London: Routledge, 2004.
71. Turbanski, S, and Schmidtbleicher, D. Effects of heavy resistance training on strength and power in upper extremities in wheelchair athletes. *J Strength Cond Res*, 24(1): 8-16, 2010.
72. Tweedy, S, M, and Vanlandewijck, Y, C. International Paralympic Committee position stand-background and scientific principles of classification in Paralympic sport. *Br J Sports Med*, 45 (4): 259-269, 2011.
73. Van Hilvoorde, I, and Landeweerd, L. Disability or extraordinary talent Francesco Lentini (three legs) versus Oscar Pistorius (no legs). *Sport, Ethics Phil*, 2 (2): 97-111, 2008.
74. Wellard, I. Body-reflexive pleasures: Exploring bodily experiences within the context of sport and physical activity. *Sport, Ed Soc*, 17 (1): 21-33, 2012.

Table 1:

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<u>Consideration for SCC working with SCI athletes</u>	<u>Example of response/measures taken</u>
<p><u>Athletes' with SCI impairment should be treated as heterogeneous:</u></p> <ul style="list-style-type: none"> • <u>Dependent on the level and completeness of lesion(s), athletes with SCI will have vastly different levels of muscular and sensory function</u> 	<ul style="list-style-type: none"> • <u>Generic principles of training applied, SCC's should however create bespoke programs for individual athletes based on their unique level of function</u>
<p><u>Be aware of the specific risks of training athletes with SCI:</u></p> <ul style="list-style-type: none"> • <u>Medical considerations when implementing S&C programs with athletes with SCI include:</u> I. <u>Involuntary, unexpected and painful muscle spasms</u> II. <u>Impaired sweat response and capacity for thermoregulation</u> III. <u>Potential of autonomic dysreflexia (AD) (inability to regulate blood pressure)</u> 	<ul style="list-style-type: none"> • <u>As stimulation below site of injury can cause spasm, transitions in and out of chairs should be minimized by carefully planning how programs are executed</u> • <u>Ensure provision of cool water sprays and fans. allow adequate hydration breaks and check training facilities are ventilated</u> • <u>Be vigilant to the signs of AD including flushed skin and disorientation</u>

Many athletes with SCI use a wheelchair habitually:

- For many, wheelchairs are required for everyday life situations for locomotion and mobility, not just for sport, resulting in unique considerations:
 - I. Forward manual propulsion requires an anterior bias in the shoulder musculature often resulting in muscular imbalance and postural issues
 - II. The shoulder has a relatively low capacity for work and potential for injury is high
 - III. Joint preservation is important as impacts long term mobility and wellbeing
- Muscle imbalances should be re-addressed by programing higher proportion of antagonistic (pulling) movements over pushing movements including reverse chair work
- Stretching, mobilization and release work should centre on the shoulders and thoracic spine area, adapting posture and alignment and reducing potential for injury
- Conditioning work should be high intensity, low volume to minimize joint degeneration (avoid overtraining muscle groups available)

Impaired core stability, grip strength and manual

dexterity:

- Athletes with cervical-level SCI may have impaired use of the torso relying on the upper extremities for muscular action
- Impaired grip (even though proximal musculature e.g. biceps may retain the capability to exert large forces) limiting the choice of exercises available and how they are completed
- Straps, bands and grip aids such as Active Hands © can be used in order to minimize the effects of impaired grip strength
- Strapping around the torso and machine can be used to ensure a stable and effective base when using fixed resistance machines
- Manual support can be offered by the SCC to assist grip and stability

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Table 2:

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Practice	Assumptions/ Problems	Critical Response	Applied Practice
Adaptive practices (e.g. adapting gym equipment for athletes with a disability to	<ul style="list-style-type: none"> • Fitness spaces and equipment designed 	<ul style="list-style-type: none"> • Adaptive practices facilitate inclusion, but continue to raise the inherent obstacles athletes with SCI encounter in S&C environments • Innovate inclusive practices are being undertaken by SCCs but in general 	<ul style="list-style-type: none"> • When designing programs, transitions between chair and machine should be minimized. This requires an understanding of the

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<u>use)</u>	<u>for able</u>	<u>there is:</u>	<u>lay out of the facility and</u>
	<u>bodied</u>	<u>I. lack of SCCs with experience of</u>	<u>careful consideration of</u>
	<u>majority</u>	<u>working with athletes with disability</u>	<u>the sequence of</u>
	<u>resulting</u>	<u>II. limited communication of these</u>	<u>exercises</u>
	<u>in:</u>	<u>practices to others</u>	<u>• Where adaptation is</u>
	<u>I. difficultie</u>	<u>• SCC's can develop an empathetic</u>	<u>required, pre-plan how</u>
	<u>s with</u>	<u>understanding of barriers experienced</u>	<u>this will be done and</u>
	<u>access</u>	<u>by athletes with a disability</u>	<u>what additional assistive</u>
	<u>II. limiting</u>		<u>equipment is required</u>
	<u>exercises</u>		<u>(e.g. straps, bands) in</u>
	<u>(e.g. may</u>		<u>order to set up quickly</u>
	<u>require</u>		<u>and efficiently</u>
	<u>transition</u>		<u>• If the current fitness</u>
	<u>out of</u>		<u>space is overly</u>
	<u>chair)</u>		<u>problematic for the</u>
	<u>• Does not</u>		<u>athlete to navigate, be</u>
	<u>take into</u>		<u>aware of facilities where</u>
	<u>account</u>		<u>the Americans with</u>
	<u>psycho-</u>		<u>Disabilities Act (ADA)</u>
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	<u>!</u>		<u>Design are employed</u>
	<u>'impairm</u>		<u>(17, 36)</u>
	<u>ent</u>		<u>• Liaise with facility</u>
	<u>effects'</u>		<u>managers about how to</u>
	<u>athletes</u>		<u>best adapt policies of</u>
	<u>with a</u>		<u>inclusive practice (e.g.</u>
	<u>disability</u>		<u>purchasing equipment</u>
	<u>experien</u>		<u>specifically designed for</u>
	<u>ce in</u>		<u>athletes with a disability)</u>
	<u>relation</u>		<u>• Continued collaboration</u>
	<u>to these</u>		<u>between multiple</u>
	<u>barriers</u>		<u>professionals throughout</u>
			<u>an individual's</u>

rehabilitation from SCI into adaptive sports. E.g. the specialized knowledge of physical therapists is vital in transitioning between specialist spinal units and community fitness centres and should be used to advise SCC's on unique adaptive practices and medical conditions. Psychologists may also be consulted.

<p><u>Reproducing the medical model of disability</u></p>	<ul style="list-style-type: none"> • Dominant negative medical/tragic ideology of disability are explicitly or implicitly reproduced • The disabled body seen as different 	<ul style="list-style-type: none"> • SCC's should develop a simple understanding of how disability can be conceptualized and reflect on how these understandings influence their own perceptions and attitudes and the practices and communications they have with their athletes • Awareness of health risks are important, but should be clearly stated and incorporated into program design without fostering unfounded anxiety (e.g. by defining rigorous exercise as dangerous for athletes with a disability) • Avoid excessive focus on impairment at the expense of developing how to best coach athletes with a disability(69) 	<ul style="list-style-type: none"> • Discriminatory and harmful communications should be avoided by learning correct terminology • Overemphasis on addressing muscular imbalances and a return to a 'normal' looking and functioning body should be avoided by developing programs for the unique demands of the athlete and their given sport/classification level. • Linear improvements in strength, power, speed and ROM should not be
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impairments that
influence an athlete's
performance over time.

Where surgical
procedures or a period of
medicalization is
required, this should be
included in periodization

- Measures should be
developed with the
athlete to record
physical, emotive and
psychological reflections
of sessions undertaken

of the athlete is not considered homogenizing the unique experiences of the athlete

Athletes with disability seen as 'supercrips'

- Cultivate unrealistic expectations amongst athletes and SCCs of what is achievable in elite level disability sport
- Risks athletes becoming a measure
- Overriding emphasis on the supercrip narrative limits other constructions of identity that should be considered in the coaching process (e.g. gendered and racial identities).
- In aspiring to be supercrips, athletes should be reminded that success in sport does not necessarily mean that individuals are empowered by sport (50)
- Supercrip narrative does not adequately take into account individual socio-cultural (e.g. economic) factors in determining success
- S&C programs should be constructed to help individual athletes reach the level of performance they are capable of
- Upward comparisons with supercrips should be avoided - an individual's progression and should be carefully monitored against standards they set in relation to their own level of performance as part of a realistic goal setting strategy
- Unshackled from medical and supercrip narratives, SCCs have potential to develop sporting bodies in line

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successf
ul (51)

with agency of the
athlete resulting in the
development of a more
empowering sporting
body

- These new outcomes of
S&C programs and sport
may include
enhancements in
performance but also
improvements in health
and the promotion of
positive body-self
relationships