

The Role of Fitness Professionals in Public Health: A Review of the Literature

De Lyon, Alexander T. C.; Neville, Ross D.; Armour, Kathleen M.

DOI:

[10.1080/00336297.2016.1224193](https://doi.org/10.1080/00336297.2016.1224193)

License:

Creative Commons: Attribution (CC BY)

Document Version

Publisher's PDF, also known as Version of record

Citation for published version (Harvard):

De Lyon, ATC, Neville, RD & Armour, KM 2016, 'The Role of Fitness Professionals in Public Health: A Review of the Literature', *Quest*, vol. 69, no. 3, pp. 313-330. <https://doi.org/10.1080/00336297.2016.1224193>

[Link to publication on Research at Birmingham portal](#)

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.



The Role of Fitness Professionals in Public Health: A Review of the Literature

Alexander T. C. De Lyon, Ross D. Neville & Kathleen M. Armour

To cite this article: Alexander T. C. De Lyon, Ross D. Neville & Kathleen M. Armour (2016): The Role of Fitness Professionals in Public Health: A Review of the Literature, Quest, DOI: [10.1080/00336297.2016.1224193](https://doi.org/10.1080/00336297.2016.1224193)

To link to this article: <http://dx.doi.org/10.1080/00336297.2016.1224193>



© 2016 Alexander T. C. De Lyon, Ross D. Neville, and Kathleen M. Armour



Published online: 12 Oct 2016.



Submit your article to this journal [↗](#)



Article views: 862



View related articles [↗](#)



View Crossmark data [↗](#)

The Role of Fitness Professionals in Public Health: A Review of the Literature

Alexander T. C. De Lyon, Ross D. Neville, and Kathleen M. Armour 

School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham, Birmingham, UK

ABSTRACT

Kinesiology researchers have long had an interest in physical activity, fitness, and health issues and in the professional education and work practices of teachers and coaches. The professional development needs and practices of “fitness professionals,” however, have not been a major concern for researchers in the field. The purpose of this article is to provide an overview of the evidence on fitness professionals, their role in physical activity for health agendas, and the professional education and training that is available to support them. The analysis indicates that there is a mismatch between the expectations placed upon fitness professionals and the training and professional education that is available to them. It is argued that pedagogy researchers in kinesiology could usefully turn their attentions to this occupational group.

KEYWORDS

Fitness professionals; health; neoliberal theory; physical activity; professional education and training; sport and exercise pedagogy

Background

There is now a consensus that engaging in regular and appropriate physical activity and exercise across the lifespan can have a profound positive effect on health and well-being (Blair, 2009; Trost, Blair, & Khan, 2014). Current recommendations, by the World Health Organization (WHO; 2010) for example, state that adults should accumulate at least 150 minutes of moderate-intensity (or at least 75 minutes of vigorous-intensity) physical activity per week in bouts of at least 10 minutes. Alongside this, it is recommended that children and young people should accumulate at least 60 minutes of moderate to vigorous physical activity each day (WHO, 2010). Yet, despite these recommendations and the negative impact of being inactive, data indicate that over a third of adults and 80% of adolescents around the world fail to reach these recommended levels of daily physical activity (Hallal et al., 2012). Today, physical inactivity is positioned as the fourth leading cause of death worldwide (WHO, 2010). Experts now argue that physical inactivity has reached pandemic status, and addressing the problem has been identified as a global public health priority (Kohl et al., 2012).

Whereas the problem of physical inactivity is widely accepted, there is far less consensus about effective solutions, the locus of responsibility and role of different professional groups in addressing it, or, indeed, the root cause of the problem (e.g. Andrews, 2008; Armour & Chambers, 2014; Joy, Blair, McBride, & Sallis, 2013; O’Sullivan, 2004; Pate, O’Neill, & McIver, 2011). It is in this dynamic and contested context that the fitness industry and its workforce of “fitness professionals”¹ operate, with claims that they can become a valuable public health

CONTACT Alexander T. C. De Lyon  atd272@bham.ac.uk  School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK.

© 2016 Alexander T. C. De Lyon, Ross D. Neville, and Kathleen M. Armour

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

resource and an essential component in the delivery of policy recommendations for reducing physical inactivity (e.g., see Central YMCA Qualifications, 2014; European Health & Fitness Association [EHFA] 2011; R. E. Sallis, 2009). Support for the role of fitness professionals as public health “assets” has been expressed by a wide variety of stakeholders, including researchers, politicians, industry organizations, and policymakers. For example, in the most recent edition of the *Fitness Professional’s Handbook*, Howley and Thompson (2012) argued that “Fitness professionals are at the cutting edge of health in much the same way the scientists discovering vaccines for major diseases were at the turn of the 20th century” (p. 14). Similarly, Oprescu, McKean, and Burkett (2012) argued that fitness professionals could be a key resource in the “war” against obesity and inactive lifestyles. The former president of the American College of Sports Medicine (ACSM), Robert Sallis, argued further by stating that:

[W]e must begin to merge the fitness industry with the healthcare industry if we are going to improve world health... With a wealth of evidence in hand, it is time for organized medicine to join with fitness professionals to ensure that patients around the world take their exercise pill. There is no better way to improve health and longevity. (R. E. Sallis, 2009, p. 4)

Naturally, from the perspective of the fitness industry, there has been a growing sense of optimism about the capacity of their workforce to address this major public health challenge. This optimism was exemplified by the former UKActive chairman and founder of LA Fitness, Fred Turok (2013), who argued not only that the industry has the facilities, footprint, and expertise to deliver on the current health agendas, but that it is their responsibility to do so.

Kinesiology researchers have long had an interest in physical activity, fitness, and health issues, and in the professional education and work practices of teachers and coaches (Sparling, 2005). In this journal, for example, the two most read articles are on coach education and professional development (Cushion, Armour, & Jones, 2003) and teacher professional learning (Ermelling, 2012). Alongside this, pedagogical researchers in the field more broadly have maintained a long-standing interest in the role of physical education (PE) teachers in the fulfillment of public health goals (e.g., Armour & Harris, 2013; McKenzie & Lounsbury, 2009; Rossi, Pavey, Macdonald, & McCuaig, 2015; J. Sallis & McKenzie, 1991) and in the professional status and role expectations for sports coaches (Gilbert & Trudel, 2004; Lyle & Cushion, 2010; Potrac, Gilbert, & Denison, 2013).

Yet, comparatively speaking, researchers in the field of kinesiology have largely ignored fitness professionals and their career-long educational needs and work practices. This is striking given the fact that for large numbers of adults post-school, a wide range of fitness professionals will be a key point of contact for physical activity and exercise support. There is scope for research to move in this direction. For example, Lawson (2005) argued strongly that there is an urgent need for sport, exercise, and PE professionals to collaborate with other professions, “enabling the various programs and services to be connected and integrated” as part of a “growing international movement that promotes inter-professional collaboration” (p. 145). Although there is limited evidence of such collaboration in practice, there is evidence that in the quest to create links between school and post-school physical activity participation, schools in some countries have tried to introduce young people to community fitness facilities and instructors as part of the PE curriculum (see, for example, Cale, 2000; Wilkinson & Bretzing, 2011). At the very least, therefore, we could argue that our gap in knowledge about fitness professionals undermines attempts to offer a consistent and joined-up life-course approach to physical activity education.

A key problem is that while there has been a succession of high-profile claims made about the role of fitness professionals in physical activity for health agendas, little is known about the capacity of this group, realistically, to deliver on these agendas or the types of education and training processes that would support them to be effective (however effectiveness is defined). It is against this backdrop that we provide a review of the evidence on fitness professionals, their role in physical activity for health agendas, and the nature of the professional education and training that is available to support them. It is in this context that we consider whether pedagogy researchers in kinesiology need to enter into this field more proactively. The analysis is grounded in the first attempt to synthesize all the available literature on “fitness professionals” and is organized into four main sections: (a) an overview of fitness professionals and existing research literature, (b) details on the methodology used to conduct the analysis of the (disparate) literature base, (c) a discussion of the four key findings of the analysis (health impacts, role ambiguity, education and training, and professional credibility), and (d) a conclusion.

Who are “fitness professionals” and what do we know about their practice?

The number of workers within the broad occupational group “fitness professionals” has grown considerably since the commercial fitness industry boom in the 1970s (Smith Maguire, 2008). According to a recent global report, in 2014, the global fitness industry generated revenues of \$84 billion, with more than 180,000 clubs serving approximately 144.7 million users (International Health, Racquet & Sportsclub Association, 2015). At the heart of this industry in the United Kingdom, for example, are more than 30,000 registered fitness/exercise professionals (Marnoch, 2013). In comparison, the United States Bureau of Labor Statistics stated that, in 2012, there were 267,000 fitness trainers and instructors who lead, deliver, instruct, and motivate individuals and groups in exercise activities (U.S. Bureau of Labor Statistics, 2014).

Despite the growth of the fitness industry and its workforce, there has been comparatively little research—and certainly no coherent research agenda—on the effectiveness of fitness professionals’ practice, education, training, and development in the context of delivering physical activity for health agendas. This research gap has already been recognized by various stakeholders and policymakers (Baart de la Faille-Deutekom, Middelkamp, & Steenbergen, 2012). In terms of the research, more formally, in an analysis of research on personal training, Middelkamp and Steenbergen (2012) found few robust studies that met the quality criteria for inclusion in their review. Similarly, in their systematic review of knowledge translation interventions targeting “fitness trainers,” Stacey, Hopkins, Adamo, Shorr, and Prud’homme (2010) identified just two studies that met their criteria for inclusion. Moreover, it seems that little is currently known about the professional capacities of this group, including by researchers in the related fields of public health and kinesiology (Sparling, 2005). This contrasts with the current state of knowledge about other groups of practitioners within the field of kinesiology (such as sports coaches and PE teachers), who have a comparatively stronger research and evidence basis for their practice (see, for example, Armour & Makopoulou, 2012; Armour, Quennerstedt, Chambers, & Makopoulou, 2015; Lyle & Cushion, 2010; North, 2013).

One factor that has impeded the development of a coherent research agenda on fitness professionals and their role in public health is that separate lines of research have been

conducted across a wide berth of disciplinary boundaries. For example, existing research has explored the training/skills policy and work organization for fitness professionals (Lloyd, 2005a, 2005b, 2008; Lloyd & Payne, 2013); the socio-cultural aspects of the fitness and the wider fitness and leisure industries (Andreasson & Johansson, 2014; Sassatelli, 2010; Smith Maguire, 2001, 2008); and the characteristics of successful personal trainers through a focus on their applied work (Melton, Dail, Katula, & Mustian, 2010; Melton, Katula, & Mustian, 2008). Operating independently of each other, however, these studies fail to offer a cumulative understanding of the ways in which the profession could be developed or how its education and training can be improved. Consequently, we argue that in the quest to educate and support individuals to be more physically active throughout the life-course, it is important to know more about fitness professionals, their role in physical activity for health agendas, and the nature of the professional education and training that is available to support them.

Methodology

The choice of a traditional literature review

A traditional literature review of the academic, policy, and gray literatures was conducted between October 2012–October 2015. The purpose of this type of review is to analyze a large body of literature in order to understand the current state of relevant knowledge about a particular topic, identify key issues and gaps in this knowledge, and to add new insights based on the analysis of a wide variety of evidence sources (Cronin, Ryan, & Coughlan, 2008; Danson & Arshad, 2014; Jesson, Matheson, & Lacey, 2011; Rozas & Klein, 2010). Therefore, this type of review was selected due to the limited evidence on the nature and extent of the research landscape for fitness professionals; the diverse range of research methodologies and disciplines that have been used to explore their training, professional education, and practice processes; and the fledgling nature of the research topic as an area of academic inquiry (including a limited and often incoherent knowledge about fitness professionals as an occupational group). As a result, we believe the combination of these factors meant the focus of the research was unsuitable for other forms of review, such as full systematic review, meta-analysis, or meta-synthesis. So, while the approach we adopted undoubtedly shares some features with these latter types of review, our aim was to pursue a less constrained and clearly delineated approach to understanding a broad topic area.

Search strategy and data analysis

Relevant literature relating to fitness professionals and health was sought using multiple search strategies and was undertaken using an iterative approach. This was considered to be an appropriate strategy in this instance, given the eclectic nature and range of the target literature base:

- Electronic databases, including CINAHL, Cochrane Library, EMBASE, MEDLINE, PsycINFO, SPORTDiscus, and Google Scholar, were searched from 1970 onwards. Searches included the use of the following terms: “fitness professional,” “exercise professional,” “fitness instructor,” “exercise instructor,” “personal trainer,” “physical

activity,” “training,” “education,” “professional development,” “practice” and “health.” The searches were limited to articles published in English, but were not limited by country of origin;

- Relevant policy documents and industry reports were sought by tracking the websites of the leading organizations in the fitness industry (e.g., EHFA,² International Health, Racquet & Sportsclub Association [IHRSA], the Register of Exercise Professionals [REPs],³ and UKActive) as well as the websites of key organizations in public health (e.g., National Institute for Health and Care Excellence [NICE] and WHO);
- The first author (A. D.) attended flagship events for leading organizations in the fitness industry in order to capture current knowledge within the “profession.” This included events organized by the EHFA, Fitness Professionals, and UKActive;
- Specialist texts, such as professional textbooks and handbooks (e.g., Howley & Thompson, 2012; Thompson, Bushman, & Desch, 2010) and professional publications (e.g., the FitPro Magazine and the REPs Journal), were analyzed to identify latest developments in the (fitness) field;
- Bibliographies from the retrieved literature were searched, together with the researchers’ personal files, for additional articles that were related to the purpose of the research.

The retrieved literature was analyzed thematically in order to assess the evidence on fitness professionals as an occupational group; their role in physical activity for health agendas; and the nature of the professional education and training that is available to support them. The rationale for this approach was that thematic analysis has been considered to be a useful and flexible tool which can potentially provide a rich and detailed understanding of eclectic data (Braun & Clarke, 2006). Moreover, the value of this approach is that it enables researchers to identify, analyze, and report patterns of meaning (themes) across different epistemological and ontological positions (Braun & Clarke, 2006). For the purposes of this article, and following our extensive analysis of the available literature, findings were organized into four key issues: (a) evidence for health impacts; (b) ambiguous role and practice expectations; (c) concerns about training and education provision; and (d) lack of recognition and professional credibility. While each of these issues are presented and discussed separately in this article, we believe that they are, in reality, interconnected.⁴

Strengths and limitations

We acknowledge that there were both strengths and limitations to the approach that we adopted to reviewing and analyzing the existing evidence. In particular, one of the main strengths of the approach was the level of flexibility that it offered. This enabled our research team to include and analyze a wide variety of different types of evidence without being impeded by either strict or inappropriate inclusion/exclusion criteria. Moreover, the iterative approach also enabled us to adapt and refine our analysis based on newly encountered material. As a result, this meant that we were able to develop important insights that could have been neglected or passed over in the steps that are required in other types of review (e.g., such as a full systematic review, meta-analysis or meta-synthesis; Jesson et al., 2011). Yet it is important to acknowledge that our subjectivity as the authors was implicit within this process, meaning that, like other forms of research, the quality of the

review was dependent upon our skills as reviewers as well as our ability to weave together the material in a logical and systematic way. Indeed, we acknowledge that adopting this type of approach has been criticized by some authors for lacking transparency on the grounds that it does not produce a clear (or reliable) evidence trail (Booth, Papaioannou, & Sutton, 2012; Petticrew & Roberts, 2006).⁵ Nevertheless, we believe that the approach we adopted was the most suitable way of addressing the overriding purpose of this research, given the state of the field as it currently functions as well as the voluminous nature of the material that we included in our analysis. In the section that follows, we present four key issues that were derived from the review process.

Four key issues for consideration

Issue 1: Evidence for health impacts

There is some evidence to suggest that fitness professionals *might* be able to improve health by promoting physical activity and providing exercise education, motivation, and support for their clients. Studies have shown, for example, that the use of personal trainers is associated with improvements in strength during exercise interventions (Malooof, Zabik, & Dawson, 2001; Mazzetti et al., 2000), increased exercise intensity (Ratamess, Faigenbaum, Hoffman, & Kang, 2008), and better adherence to an exercise program overall (Jeffery, Wing, Thorson, & Burton, 1998). Moreover, research has also found that one-to-one personal training can be an effective approach to changing individuals' attitudes toward exercising, thereby potentially increasing their levels of physical activity (McClaran, 2003). In addition, a recent study found that the use of a personal trainer in a private health club setting led to significantly greater improvements in a variety of health-related measures (such as improvements in lean body mass) in comparison to fitness members who were responsible for directing their own training (Storer, Dolezal, Berenc, Timmins, & Cooper, 2014). Significantly, the authors of the study noted a lack of published research data on the effectiveness of fitness professionals working in applied fitness and leisure settings.

In terms of the research evidence, our findings indicate that the most substantial body of research linking fitness professionals and health can be found in the research on exercise referral schemes (Sowden & Raine, 2008). These initiatives were introduced as a way for general medical practitioners and other health-care professionals to refer patients to a fitness club and/or individual fitness professional as a means for using exercise to improve their health.⁶ Yet despite the expansion of these schemes during the 1990s and 2000s, there is strong evidence illustrating the limited effectiveness of the schemes in practice. Most notably, a succession of highly cited systematic review articles have consistently shown that exercise referral schemes have only a limited and often short-term impact on patients' levels of physical activity and other associated health outcomes (such as psychological well-being and overall health-related quality of life; NICE, 2006, 2014; Pavey, Anokye et al. 2011; Pavey, Taylor et al., 2011; Williams, Hendry, France, Lewis, & Wilkinson, 2007). Yet, in spite of this, the existing research has provided very few recommendations that are specifically focused on improving the professional training of the fitness professionals who are working as a core part of these initiatives. Our findings suggest that one reason for this may be that existing research has largely focused on analyzing the effectiveness of the schemes rather than the practices and effectiveness of the practitioners working on them.

As it stands, there is very little data available on the number, nature, quality, or effectiveness of the interactions that take place between fitness professionals and members of the public on a daily basis. As a result, it may be simply premature to claim that, as a group, fitness professionals are driving (or have the potential to drive) positive public health impacts. An important point to note here is that very few public funds have been made available to conduct research on the practice of fitness professionals. One reason for this, of course, is that unlike PE teachers, the group mainly practises within the private sector, and the fitness industry is a field of activity driven predominantly by commercial interests (Andreasson & Johansson, 2014; Sassatelli, 2010; Smith Maguire, 2008). So, while it has been argued by organizations such as UKActive that a robust body of evidence is needed on the health impacts of the fitness industry, it is unclear who would fund such research. Research conducted on the industry by the industry is unlikely to offer the kind of independent evaluation that is required. In fact, as is demonstrated in the next section, the fitness industry has, in many ways, benefited from the lack of robust scrutiny of its practices.

Issue 2: Ambiguous role and practice expectations

Among the many practitioners who fall within the broad fitness professional category, it is the training, development, and practice of personal trainers that has been studied most frequently (cf. George, 2008; Madeson, Hultquist, Church, & Fisher, 2010; Melton et al., 2008, 2010; Smith Maguire, 2001). Here, the evidence is clear that a personal trainer's role extends far beyond the programming of structured exercise activities. Moreover, like other groups of practitioners within the field of kinesiology, the role has been continually shifting to meet new and emerging practice expectations. For example, evidence shows that personal trainers routinely take on a multitude of roles, including those of teacher, trainer, counselor, coach, supervisor, supporter, nutritionist, biomechanist, bodybuilding evaluator and consultant, life management advisor, weight controller, personal life consultant, business person, and physical fitness advocate (Chen, 2006; Chiu, Lee, & Lin, 2010; McKean, Slater, Opreescu, & Burkett, 2015; Smith Maguire, 2001, 2008). In this context, it can be noted that very few forms of regulation exist to restrict the types of work they undertake in practice environments. Because of this, these fitness workers are considered to be a "Jack/Jill of all trades," integrating skills in business, psychology, communication, and teaching, as well as those of fitness training, in order to meet the diverse needs of each individual exercise participant (or client) (Reiff, 1996).

The evidence suggests that role boundaries can become particularly problematic in these contexts due to the factors that emerge within client–trainer interactions. For instance, some research has shown that personal trainers can develop deep and often intimate relationships with their clients that, in turn, serve to "blur" respective trainer–client role boundaries. The problem is illustrated by Madeson et al.'s (2010) phenomenological investigation of women's experiences of personal training, which found that participants would discuss very personal issues, such as family struggles and other problems in their lives, with their trainers. One of the participants in this study even compared personal training to a form of therapy in her life, and several of the other participants described how their personal trainers had enabled them to improve their social relationships with other people, such as other gym members and trainers (Madeson et al., 2010).

An important issue that has emerged within the sociological literature is the conflation of a fitness professional's bodily appearance (or "bodily capital") (Frew & McGillivray, 2005) with their level of perceived professional competence and/or health authority (Hutson, 2013). Clients tend to believe that if a fitness professional has a "good body," then this signifies a high level of professional knowledge (Hutson, 2013). But there is an obvious point to be made here—that such personal "bodily capital" does not, in itself, translate into professional knowledge, i.e., the kind of detailed and personalized health, fitness, or lifestyle advice that clients are likely to require. Nonetheless, this image appears to be an important factor for clients when deciding whether or not to trust a fitness professional and follow the advice given, regardless of actual levels of knowledge and skills. This has clear implications for schools and teachers who are seeking to introduce their pupils to community fitness settings and professionals as well as those adolescents who are choosing to exercise in these contexts of their own volition. It is worth noting, for example, the growing number of legal actions taken against fitness and/or exercise professionals who, it is claimed, lack the requisite knowledge and skills that are needed to meet those client expectations that are an inherent part of their daily practice (Eickhoff-Shemek, 2010; Warburton et al., 2011).

A confounding factor here is the high level of professional autonomy that characterizes the work of fitness professionals. These practitioners are typically able to develop idiosyncratic approaches to programming, instruction, evaluation, and sales that are grounded in their individual experience, education, preference, and personal philosophies (Lloyd & Payne, 2013). Together, these factors may help to explain why members of the public report difficulty in understanding the different levels of training, education, and experience of individual fitness professionals (Warburton et al., 2011). Thus, given the apparent scope and ambiguity surrounding the nature of their roles and practice, it is perhaps unsurprising to find research which shows that fitness professionals engage in (and take responsibility for) client behaviors that go beyond the original (and arguably legitimate) boundaries of the roles, i.e., those roles for which they are trained (Anderson, Elliott, & Woods, 2010; Gavin, 1996).

Issue 3: Concerns about training and education provision

Despite documented concerns about their role and practice expectations, fitness professionals are taking responsibility for providing exercise and health-related services for an increasingly diverse range of client groups. For example, research indicates that fitness professionals have delivered health-focused exercise interventions for individuals with obesity (Jeffery et al., 1998), diabetes (Lubans, Plotnikoff, Jung, Eves, & Sigal, 2012), Parkinson's disease (Corcos et al., 2013), mental health issues (Moore, Moore, & Murphy, 2011), and many other health-related conditions (BHF National Centre—Physical Activity & Health and Loughborough University, 2010). Moreover, an expansion of the role outwardly from the traditional gym environment has meant that the groups are now practicing in a wide range of health-related settings, such as schools, medical centers, hospitals, sports medicine and rehabilitation clinics, and corporate wellness centers (Thompson et al., 2010).

The high levels of responsibility that fitness professionals take on in these various contexts raises issues and has led to a series of mounting concerns about the adequacy of their formal training and professional education (e.g., see Central YMCA Qualifications, 2014; EHFA, 2011; Malek, Nalbone, Berger, & Coburn, 2002; McKean et al., 2015). In one of the few empirical studies conducted on this topic, it was shown that fitness professionals

who hold a bachelor's degree in kinesiology/exercise science and/or possess qualifications accredited by the ACSM and the National Strength and Conditioning Association (NSCA), scored significantly higher in an "objective" measure of health- and fitness-related knowledge compared to those without such qualifications (Malek et al., 2002). In this study, it was reported that personal fitness trainers who did not graduate with a bachelor's degree in exercise science scored 31% less on this objective measure than those personal fitness trainers holding a bachelor's degree or higher. These findings are, to some extent, consistent with systematic review evidence which shows that fitness trainers with higher levels of education are more likely to use evidence-based sources of information to inform their practice (e.g., from scientific journals), compared to those who have lower education levels, who are more likely to rely on sources such as the Internet (Stacey et al., 2010). Crucially, it was found that fitness trainers with lower levels of qualification reported difficulty in assessing the quality of the information that they accessed (particularly from the Internet) (Stacey et al., 2010).

Even though fitness professionals assume responsibility for a wide range of health-related work, there is remarkably little agreement or understanding about which qualifications or other forms of continuing professional development are the most useful in terms of supporting their daily work practices. Research has focused mainly on fitness professionals' initial training and development and has recommended that degree-level certification in exercise science/kinesiology (or related disciplines) should form the primary basis of their professional competence (Rupp, Campbell, Thompson, & Terbizan, 1999). Yet, if we take into consideration the extent of the role and practice expectations that were outlined in the previous section, it is unlikely that a single qualification provided in higher education environments will adequately prepare fitness professionals for the career-long challenges they will face while working in the fitness industry. Given the relative autonomy of this occupational group, as it currently stands, it is likely that fitness professionals will be left to pursue overly individualistic and largely *ad hoc* ways of enhancing their professional development (De Lyon & Cushion, 2013).

Issue 4: Lack of recognition and professional credibility

A significant barrier that the fitness sector as a whole faces is an understandable lack of recognition by key stakeholders in public health and education. This was highlighted in an industry report by the EHFA, which found that the established health professions held negative perceptions of the fitness industry and its ability to assure appropriate levels of education and training for its members (EHFA, 2011). There is a degree of skepticism, in the medical community in particular, about the knowledge base and level of professionalism that underpins the industry. In exercise referral schemes, for example, this was one factor that was associated with low rates of referral (Royal College of Physicians, 2012).

In a further dimension of this issue, Lloyd and Payne (2013) have argued that in the United Kingdom, there is an inherent tension within the fitness industry. The industry and its workforce are keen to emphasize the quality and professionalism of their work, but they often lack the organizational structures that are required to deliver a high-quality service. This problem was illustrated by findings of the recent Central YMCA Qualifications report on the future of exercise professionals, which identified clear knowledge and skills gaps within the fitness sector (Central YMCA Qualifications, 2014).

Specifically, findings demonstrated that 55% of the operational managers who responded believed that fitness professionals lacked the necessary skills to deliver social and psychological support to inactive population groups. In addition, managers frequently drew attention to the inability of fitness professionals to deliver sufficiently informed exercise interventions for special population groups, such as people with disabilities and children/young people (Central YMCA Qualifications, 2014). In this context, it has been argued that the growth of for-profit organizations that gain financially from delivering fitness qualifications and providing certification represents a major safety concern when the practitioners they have trained are tasked with the responsibility of dealing with specialist population groups (Warburton et al., 2011).

It has been argued that the widespread complacency within the fitness sector about career progression and job quality results in employers having little incentive to tackle problems of low wages or improve opportunities for training and development (Lloyd, 2005a, 2005b, 2008). Workforce turnover in the fitness professions is high as a result of low pay, an oversupply of workers holding relevant health and fitness qualifications, a lack of career progression, and the prevalence of shift work (Lloyd, 2005a, 2008). Added to this, it has been noted that the continuing professional development courses that are provided in the fitness industry are often too short and compact, meaning that fitness professionals do not receive the level of training/education they require for the tasks they undertake in “real world” practice environments (Central YMCA Qualifications, 2014; De Lyon & Cushion, 2013). In combination, these factors mean that employers face challenges in employing and attracting well-educated staff (e.g., those fitness professionals with appropriate levels of training or with higher qualification levels) who might be best placed to serve the health and fitness needs of their clients. Furthermore, with the focus on sales growth and customer service in the fitness *industry*, it has been reported that employers are not sufficiently concerned when fitness instructors are “more adept at smiling than they are at understanding knee ligaments” (Lloyd, 2005a, p. 31).

Conclusions and implications for pedagogy researchers in kinesiology

The purpose of this article has been to provide an overview of the evidence on fitness professionals, their role in physical activity for health agendas, and the nature of the professional education that is available to support them. The analysis has highlighted strong societal expectations that the group will be able to play a key role in reducing levels of lifelong physical inactivity, thereby contributing toward improvements in public health outcomes. Yet it is clear from the available evidence that there are problems. Our review illustrates that while fitness professionals do assume responsibility for implementing physical activity and exercise interventions in complex practice settings, there are many concerns about their capability to meet the needs of the diverse range of population groups they seek to serve. Importantly, our findings indicate that there is a significant mismatch between the expectations placed upon fitness professionals in practice and the training and professional education that is available to support them.

We argue that kinesiology researchers, and particularly those in pedagogy, have a legitimate interest—and clear opportunity—to secure a better understanding of the education and practice needs of fitness professionals as a health-related occupational group. For example, a key strength of pedagogical research is its capacity to cross traditional disciplinary and

sub-disciplinary boundaries, including those in the natural and social sciences, in order to address major societal issues such as physical inactivity (Armour & Chambers, 2014). Thus, following Lawson (2005), we argue that all stakeholders could benefit from the development of closer links between fitness professionals and other physical activity education professionals in schools, sports clubs, and public health contexts. The aim, surely, must be to find new ways for the different groups to work together across traditional professional divides (Armour & Chambers, 2014). And while it is clear that fitness professionals lack the professional credibility of other groups of practitioners that undertake physical activity and health work, they are an increasingly accessible group for some segments of the population.

Going forward, it is important that the knowledge, training, education, and practice of fitness professionals becomes subject to more robust analysis and a greater level of independent scrutiny. There is already a consensus that radical changes are needed in the fitness industry if its workforce is going to be able meet the wide range of practice expectations that we have identified in this review article. For example, the former CEO of UKActive, David Stalker, has recently argued that:

[T]he industry's been caught in the crosshairs of the confluence of health, technology, sport and popular culture... Ours is one of the few sectors able to straddle these mega trends, as relevant in grappling the costs of an aging society as in appealing to new generations demanding everything on individualized terms... We've seen the borders of our sector smashed down, with new entrants dominating all spheres... We're seeing new business models and investments in service to meet new demands and expectations... I believe change is coming. We are now moving into an era of data, science and fact, beyond [the] first generation of the sector where we were doing everything for the first time. (Stalker in Phillips, 2016, p. 34)

While we agree that these are undoubtedly challenges facing the sector, our review of the available research evidence indicates that the problems are enduring and deep rooted. The four key issues that we have identified do not stand alone. The challenge, therefore, lies in understanding the complex *interrelationships* that exist between each of these issues. Simply put, we believe that understanding the role of fitness professionals in public health requires a coherent theoretical framework, empirical research that is contextually grounded, and a research approach that is willing and able to take into account evidence that embraces complexity within professional education and practice settings. To conclude the article, we address each of these points briefly and in reverse order.

Firstly, our review indicates that problems relating to fitness professionals' training and professional education are strongly tied to the organizational and employment structures that exist in terms of their work. For example, fitness professionals' ability to meet the health-related needs of their clients cannot be separated from the conditions of employment that prevail within the sector. Most notably, these include the problems that arise from low levels of pay, high workforce turnover, and a lack of career development infrastructures. Furthermore, these problems are reflected in the issues we have identified concerning the levels of professionalism and credibility that underpin the fitness sector (particularly in relation to how the medical sector views the fitness industry and its practitioners). Clearly, these are issues in which pedagogical researchers could have an interest and would be able to offer a wealth of expertise from research agendas in education and its more established subfields (for example, from the more established body of research on the education and professional development of PE teachers and coaches).⁷

Secondly, in relation to the conduct of empirical work, we believe that future research in the area would benefit from utilizing approaches that take into account the “wholeness” and complexities of the contexts in which fitness professionals’ work and development takes place. This means taking into account a combination of social, cultural, political, and economic factors that shape these processes. For example, case study research designs could be useful in this regard, given that they take into account a combination of situational factors while also grounding research problems within the real-life contexts in which they occur (Armour & Griffiths, 2012; Thomas, 2011; Yin, 2014). This is in keeping with research that has already been conducted within the field of kinesiology, where some of the most influential empirical research concerning practitioners within the field have been case studies (see, for example, Jones, Armour, & Potrac, 2003; Macdonald & Tinning, 1995; Schempp, 1993). In terms of research on fitness professionals more specifically, case study designs would enable researchers to make observations about how the issues we have identified in this review actually come together and play out in practice settings. For example, a case study conducted at the level of an individual fitness professional could focus on understanding all of the factors that go into successfully achieving health outcomes with clients. As a research approach, therefore, case study research designs could offer a useful means for producing knowledge about the training, professional education, and practice processes for fitness professionals by locating these processes within their real-life circumstances.

Finally, the findings of our review point toward a broader theoretical framework that could be used to develop knowledge about fitness professionals as a health-related occupational group. Researchers within the field of kinesiology have already drawn upon neoliberal theory in relation to PE policy, practice, and governance (Evans & Davis, 2014; Macdonald, 2011, 2014; Pope, 2014). There is also an established body of research on the relationship between the larger processes of neoliberalization and its consequences for health (Ayo, 2012; Brown & Baker, 2012; LeBesco, 2011). Neoliberal theory has not been systematically used within the existing research on fitness professionals, yet we believe that it would provide an effective framework for exploring the complex interrelationships that we have identified in this review article. It is clear to us that fitness professionals exhibit many of the defining features (or hallmarks) of workforces that operate within free-market conditions, and that the occupational group has, in turn, been strongly shaped by neoliberal ideologies, policies, and practices. This link can be seen within the key issues that we have identified in this review article: (1) the fact that fitness professionals operate under market conditions and are subject to a general lack of regulation and monitoring of their daily work practices; (2) the degree of professional autonomy and flexibility that fitness professionals experience, which has enabled the occupational group to expand the scope of its practice beyond the boundaries of its legitimate claim to expertise; (3) the nature of the professional training and education opportunities that are currently available for fitness professionals, which lack coherent developmental pathways (because they are so influenced by commercial interests); and (4) the fundamental tension that exists within the fitness industry between profit and professionalism (i.e., between generating profit from sales and establishing standards of professionalism that are actually based on having provided a quality service). Acknowledging the interrelationships between these issues will be an important first step for those who want to understand the complex nature of the role of fitness professionals in public health.

Notes

1. Our review found that the term “fitness professional” is being used inconsistently to refer to a broad range of occupational roles. For example, these include the related roles of “personal trainer,” “fitness instructor,” “exercise referral specialist,” and many more. It is beyond the scope of this article to critically evaluate the appropriate use of terminology in this context; however, we believe this is an area that warrants further research attention.
2. EHFA is now called EuropeActive to align with the organization’s vision of increasing levels of physical activity among members of the European population.
3. REPs is an independent public register which claims responsibility for recognizing the qualifications and expertise of health-enhancing exercise instructors in the United Kingdom. As a founding member of the International Confederation of Registers of Exercise Professionals (ICREPS) and partner of the European Register of Exercise Professionals (EREPS), REPs forms part of an international framework of competency standards for fitness professionals.
4. Material was included in the main body of the article if we believed that it offered an important contribution to current knowledge of the research topic.
5. It has been argued, for example, that traditional literature reviews “can be made to tell any story one wants them to,” which, in turn, “can lead to biased conclusions, and to harm and wasted resources” (Petticrew & Roberts, 2006, p. 5).
6. The purpose of exercise referral schemes is to encourage sedentary patients with existing health problems or risk factors to become more physically active. These schemes were initially developed in the United Kingdom during the 1990s, with similar schemes emerging in countries such as New Zealand, Australia and the United States (Sowden & Raine, 2008).
7. Another area that pedagogical researchers could contribute to is the role of new media technologies in the fitness sector. While conducting our review, we noted a paucity of research on the impact of digital technologies (such as the Internet, social media, wearable fitness tracking devices, and mobile applications) on fitness professionals’ work practices. This is despite the wide-spread use of digital technologies within the sector (see, for example, Dale, Godinet, Kears, & Field, 2010; Millington, 2016).

Funding

The work is supported by the Economic and Social Research Council (grant number: ES/J50001X/1).

ORCID

Kathleen Armour  <http://orcid.org/0000-0002-1430-7420>

References

- Anderson, G., Elliott, B., & Woods, N. (2010). The Canadian personal training survey. *Journal of Exercise Physiology Online*, 13(5), 19–28.
- Andreasson, J., & Johansson, T. (2014). *The global gym: Gender, health and pedagogies*. New York, NY: Palgrave MacMillan.
- Andrews, D. L. (2008). Kinesiology’s *inconvenient truth* and the physical cultural studies imperative. *Quest*, 60(1), 45–62. doi:10.1080/00336297.2008.10483568
- Armour, K., & Griffiths, M. (2012). Case study research. In K. Armour, & D. Macdonald (Eds.), *Research methods in physical education and youth sport* (pp. 204–216). London, UK: Routledge.
- Armour, K. M., & Chambers, F. C. (2014). Sport & exercise pedagogy: The case for a new integrative sub-discipline in the field of sport & exercise sciences/kinesiology/human movement sciences. *Sport, Education & Society*, 19, 855–868. doi:10.1080/13573322.2013.859132

- Armour, K. M., & Harris, J. (2013). Making the case for developing new PE-for-health pedagogies. *Quest*, 65, 201–219. doi:10.1080/00336297.2013.773531
- Armour, K. M., & Makopoulou, K. (2012). Great expectations: Teacher learning in a national professional development programme. *Teaching & Teacher Education*, 28, 336–346. doi:10.1016/j.tate.2011.10.006
- Armour, K. M., Quennerstedt, M., Chambers, F. C., & Makopoulou, K. (2015). What is ‘effective’ CPD for contemporary physical education teachers? A Deweyan framework. *Sport, Education & Society*, 1–13. i-first. doi:10.1080/13573322.2015.1083000
- Ayo, N. (2012). Understanding health promotion in a neoliberal climate and the making of health conscious citizens. *Critical Public Health*, 22(1), 99–105. doi:10.1080/09581596.2010.520692
- Baart De La Faille-Deutekom, M., Middelkamp, I., & Steenbergen, J. (2012). *The state of research in the global fitness industry*. Zeist, The Netherlands: HDD Group.
- BHF National Centre—Physical Activity & Health and Loughborough University. (2010). *Exercise referral toolkit*. Retrieved from <http://www.bhfactive.org.uk/sites/Exercise-Referral-Toolkit/downloads.html>
- Blair, S. N. (2009). Physical inactivity: The biggest public health problem of the 21st century. *British Journal of Sports Medicine*, 43(1), 1–2.
- Booth, A., Papaioannou, D., & Sutton, A. (2012). *Systematic approaches to a successful literature review*. London, UK: Sage.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. doi:10.1191/1478088706qp063oa
- Brown, B. J., & Baker, S. (2012). *Responsible citizens: Individuals, health and policy under neoliberalism*. London, UK: Anthem.
- Cale, L. A. (2000). Physical activity promotion in secondary schools. *European Physical Education Review*, 6(1), 71–90. doi:10.1177/1356336X000061006
- Central YMCA Qualifications. (2014). *Tomorrow’s exercise professionals: What does the future hold?* London, UK: Author.
- Chen, C. C. (2006). Discussion of the market of fitness centres and personal trainers in Taiwan. *Sport Management*, 11, 35–44.
- Chiu, W., Lee, Y., & Lin, T. (2010). Performance evaluation criteria for personal trainers: An analytical hierarchy process approach. *Social Behavior and Personality: An International Journal*, 38, 895–905. doi:10.2224/sbp.2010.38.7.895
- Corcoss, D. M., Robichaud, J. A., David, F. J., Leurgans, S. E., Vaillancourt, D. E., Poon, C., ... Comella, C. L. (2013). A two-year randomized controlled trial of progressive resistance exercise for Parkinson’s disease. *Movement Disorders*, 28, 1230–1240. doi:10.1002/mds.25380
- Cronin, P., Ryan, F., & Coughlan, M. (2008). Undertaking a literature review: A step-by-step approach. *British Journal of Nursing*, 17(1), 38–43. doi:10.12968/bjon.2008.17.1.28059
- Cushion, C. J., Armour, K. M., & Jones, R. L. (2003). Coach education and continuing professional development: Experience and learning to coach. *Quest*, 55, 215–230. doi:10.1080/00336297.2003.10491800
- Dale, S., Godinet, S., Kears, N., & Field, A. (2010). *The future of fitness: A white paper*. Auckland, New Zealand: Les Mills International. Retrieved from http://w2.lesmills.com/files/globalcentral/docs/Future%20of%20Fitness%20White%20Paper_for%20release_Dec%202009.pdf
- Danson, M., & Arshad, N. (2014). The literature review. In K. O’Gorman & R. MacIntosh (Eds.), *Research methods for business and management: A guide to writing your dissertation* (pp. 37–57). Oxford, UK: Goodfellow.
- De Lyon, A. T. C., & Cushion, C. J. (2013). The acquisition and development of fitness trainers’ professional knowledge. *Journal of Strength & Conditioning Research*, 27, 1407–1422. doi:10.1519/JSC.0b013e3182653c1
- Eickhoff-Shemek, J. M. (2010). An analysis of 8 negligence lawsuits against personal fitness trainers: 3 major liability exposures revealed. *ACSM’s Health & Fitness Journal*, 14(5), 34–37. doi:10.1249/FIT.0b013e3181ed58b4

- Ermelling, B. A. (2012). Improving teaching through continuous learning: The inquiry process John Wooden used to become coach of the century. *Quest*, 64, 197–208. doi:10.1080/00336297.2012.693754
- European Health & Fitness Association (EHFA). (2011). *Becoming the hub: The health and fitness sector and the future of health enhancing physical activity: Final report*. Commissioned by the European Commission. Brussels, Belgium: Author.
- Evans, J., & Davis, B. (2014). Physical education PLC: Neoliberalism, curriculum and governance. New directions for PESP research. *Sport, Education & Society*, 19, 869–884. doi:10.1080/13573322.2013.850072
- Frew, M., & McGillivray, D. (2005). Health clubs and body politics: Aesthetics and the quest for physical capital. *Leisure Studies*, 24, 161–175. doi:10.1080/0261436042000300432
- Gavin, J. (1996). Personal trainers' perceptions of role responsibilities, conflicts, and boundaries. *Ethics & Behavior*, 6(1), 55–69. doi:10.1207/s15327019eb0601_4
- George, M. (2008). Interactions in expert service work: Demonstrating professionalism in personal training. *Journal of Contemporary Ethnography*, 37(1), 108–131. doi:10.1177/0891241607309498
- Gilbert, W. D., & Trudel, P. (2004). Analysis of coaching science research published from 1970–2001. *Research Quarterly for Exercise & Sport*, 75, 388–399. doi:10.1080/02701367.2004.10609172
- Hallal, P. C., Andersen, L. B., Bull, F. C., Guthold, R., Haskell, W., & Ekelund, U. (2012). Global physical activity levels: Surveillance progress, pitfalls, and prospects. *The Lancet*, 380, 247–257. doi:10.1016/S0140-6736(12)60646-1
- Howley, E. T., & Thompson, D. L. (2012). *Fitness professional's handbook* (6th ed.). Champaign, IL: Human Kinetics.
- Hutson, D. J. (2013). “Your body is your business card”: Bodily capital and health authority in the fitness industry. *Social Science & Medicine*, 90, 63–71. doi:10.1016/j.socscimed.2013.05.003
- International Health, Racquet & Sportsclub Association. (2015). *The IHRSA global report 2015*. Boston, MA: Author.
- Jeffery, R. W., Wing, R. R., Thorson, C., & Burton, L. R. (1998). Use of personal trainers and financial incentives to increase exercise in a behavioral weight-loss program. *Journal of Consulting & Clinical Psychology*, 66, 777–783. doi:10.1037/0022-006X.66.5.777
- Jesson, J. K., Matheson, L., & Lacey, F. M. (2011). *Doing your literature review: Traditional and systematic techniques*. London, UK: Sage.
- Jones, R. L., Armour, K. M., & Potrac, P. (2003). Constructing expert knowledge: A case study of a top-level professional soccer coach. *Sport, Education & Society*, 8, 213–229. doi:10.1080/13573320309254
- Joy, E., Blair, S. N., McBride, P., & Sallis, R. (2013). Physical activity counselling in sports medicine: A call to action. *British Journal of Sports Medicine*, 47(1), 49–53. doi:10.1136/bjsports-2012-091620
- Kohl, H. W., Craig, C. L., Lambert, E. V., Inoue, S., Alkandari, J. R., Leetongin, G., & Kahlmeier, S. (2012). The pandemic of physical inactivity: Global action for public health. *The Lancet*, 380, 294–305. doi:10.1016/S0140-6736(12)60898-8
- Lawson, H. A. (2005). Empowering people, facilitating community development, and contributing to sustainable development: The social work of sport, exercise, and physical education programs. *Sport, Education & Society*, 10(1), 135–160. doi:10.1080/1357332052000308800
- LeBesco, K. (2011). Neoliberalism, public health, and the moral perils of fatness. *Critical Public Health*, 21, 153–164. doi:10.1080/09581596.2010.529422
- Lloyd, C. (2005a). Competitive strategy and skills: Working out the fit in the fitness industry. *Human Resource Management Journal*, 15(2), 15–34. doi:10.1111/j.1748-8583.2005.tb00144.x
- Lloyd, C. (2005b). Training standards as a policy option? The regulation of the fitness industry. *Industrial Relations Journal*, 36, 367–385. doi:10.1111/j.1468-2338.2005.00365.x
- Lloyd, C. (2008). Recruiting for fitness: Qualifications and the challenges of an employer-led system. *Journal of Education & Work*, 21, 175–195. doi:10.1080/13639080802214019

- Lloyd, C., & Payne, J. (2013). Changing job roles in the Norwegian and UK fitness industry: In search of national institutional effects. *Work, Employment & Society*, 27(1), 3–20. doi:10.1177/0950017012460325
- Lubans, D. R., Plotnikoff, R. C., Jung, M., Eves, N., & Sigal, R. (2012). Testing mediator variables in a resistance training intervention for obese adults with type 2 diabetes. *Psychology & Health*, 27, 1388–1404. doi:10.1080/08870446.2011.613471
- Lyle, J., & Cushion, C. J. (2010). *Sports coaching: Professionalisation and practice*. Edinburgh, UK: Churchill Livingstone.
- Macdonald, D. (2011). Like a fish in water: Physical education policy and practice in the era of neoliberal globalization. *Quest*, 63(1), 36–45. doi:10.1080/00336297.2011.10483661
- Macdonald, D. (2014). Is global neo-liberalism shaping the future of physical education? *Physical Education & Sport Pedagogy*, 19, 494–499. doi:10.1080/17408989.2014.920496
- Macdonald, D., & Tinning, R. (1995). Physical Education teacher education and the trend to proletarianization: A case study. *Journal of Teaching in Physical Education*, 15(1), 98–118. doi:10.1123/jtpe.15.1.98
- Madeson, M. N., Hultquist, C., Church, A., & Fisher, L. A. (2010). A phenomenological investigation of women's experiences with personal training. *International Journal of Exercise Science*, 3, 157–169.
- Malek, M. H., Nalbone, D. P., Berger, D. E., & Coburn, J. W. (2002). Importance of health science education for personal fitness trainers. *Journal of Strength & Conditioning Research*, 16(1), 19–24. doi:10.1519/1533-4287(2002)016<0019:IOHSEF>2.0.CO;2
- Maloof, R. M., Zabik, R. M., & Dawson, M. L. (2001). The effect of use of a personal trainer on improvement of health related fitness for adults. *Medicine & Science in Sports & Exercise*, 33(5), s74. doi:10.1097/00005768-200105001-00424
- Marnoch, J. (2013, February). *REPs update*. The Register of Exercise Professionals Welsh Convention, Cardiff, Wales, United Kingdom.
- Mazzetti, S. A., Kraemer, W. J., Volek, J. S., Duncan, N. D., Ratamess, N. A., Gomez, A. L., ... Fleck, S. J. (2000). The influence of direct supervision of resistance training on strength performance. *Medicine & Science in Sports & Exercise*, 32, 1175–1184. doi:10.1097/00005768-200006000-00023
- McClaran, S. R. (2003). The effectiveness of personal training on changing attitudes towards physical activity. *Journal of Sports Science & Medicine*, 2(1), 10–14.
- McKean, M. R., Slater, G., Opreescu, F., & Burkett, B. J. (2015). Do the nutrition qualifications and professional practices of registered exercise professionals align? *International Journal of Sport Nutrition, Exercise & Metabolism*, 25, 154–162. doi:10.1123/ijnsnem.2014-0051
- McKenzie, T. L., & Lounsbury, M. A. F. (2009). School physical education: The pill not taken. *American Journal of Lifestyle Medicine*, 3, 219–225. doi:10.1177/1559827609331562
- Melton, D. I., Dail, T. K., Katula, J. A., & Mustian, K. M. (2010). The current state of personal training: Managers' perspectives. *Journal of Strength & Conditioning Research*, 24, 3173–3179. doi:10.1519/JSC.0b013e3181e381f5
- Melton, D. I., Katula, J. A., & Mustian, K. M. (2008). The current state of personal training: An industry perspective of personal trainers in a small Southeast community. *Journal of Strength and Conditioning Research*, 22, 883–889. doi:10.1519/JSC.0b013e3181660dab
- Middelkamp, J., & Steenbergen, J. (2012). Personal training. In M. Baart De La Faille-Deutekom, J. Middelkamp, & J. Steenbergen (Eds.), *The state of research in the global fitness industry* (pp. 56–66). Zeist, The Netherlands: HDD Group.
- Millington, B. (2016). Fit for prosumption: Interactivity and the second fitness boom. *Media, Culture & Society*, i-first. doi:10.1177/0163443716643150
- Moore, G. F., Moore, L., & Murphy, S. (2011). Facilitating adherence to physical activity: Exercise professionals' experiences of the National Exercise Referral Scheme in Wales: A qualitative study. *BMC Public Health*, 11, 935. doi:10.1186/1471-2458-11-935
- National Institute for Health and Care Excellence. (2006). *A rapid review of the effectiveness of exercise referral schemes to promote physical activity in adults*. London, UK: Author.

- National Institute for Health and Care Excellence. (2014). *Exercise referral schemes to promote physical activity*. London, UK: Author.
- North, J. (2013). Philosophical underpinnings of coaching practice research. *Quest*, 65, 278–299. doi:10.1080/00336297.2013.773524
- O’Sullivan, M. (2004). Possibilities and pitfalls of a public health agenda for physical education. *Journal of Teaching in Physical Education*, 23, 392–404. doi:10.1123/jtpe.23.4.392
- Opreescu, F., McKean, M., & Burkett, B. (2012). Exercise Professionals - could they be the forgotten public health resource in the war against obesity? *Journal of Sports Medicine & Doping Studies*, 2(5), e122. doi:10.4172/2161-0673.1000e122
- Pate, R. R., O’Neill, J. R., & McIver, K. L. (2011). Physical activity and health: Does physical education matter? *Quest*, 63(1), 19–35. doi:10.1080/00336297.2011.10483660
- Pavey, T. G., Anokye, N., Taylor, A. H., Trueman, P., Moxham, T., Fox, K. R., ... Taylor, R. S. (2011). The clinical effectiveness and cost-effectiveness of exercise referral schemes: A systematic review and economic evaluation. *Health Technology Assessment*, 15(44), 1–254. doi:10.3310/hta15440
- Pavey, T. G., Taylor, A. H., Fox, K. R., Hillsdon, M., Anokye, N., Campbell, J. L., ... Taylor, R. S. (2011). Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: Systematic review and meta-analysis. *British Medical Journal*, 343, d6462. doi:10.1136/bjsports-2012-e6462rep
- Petticrew, M., & Roberts, H. (2006). *Systematic reviews in the social sciences*. Oxford, UK: Blackwell.
- Phillips, J. (2016, June 16). Interview: David Stalker. *Health Club Management*, 236, 34–38.
- Pope, C. C. (2014). The jagged edge and the changing shape of health and physical education in Aotearoa New Zealand. *Physical Education & Sport Pedagogy*, 19, 500–511. doi:10.1080/17408989.2013.837440
- Potrac, P., Gilbert, W., & Denison, J. (2013). *Routledge handbook of sports coaching*. London, UK: Routledge.
- Ratamess, N. A., Faigenbaum, A. D., Hoffman, L. R., & Kang, J. (2008). Self-selected resistance training intensity in healthy women: The influence of a personal trainer. *Journal of Strength & Conditioning Research*, 22(1), 103–111. doi:10.1519/JSC.0b013e31815f29cc
- Reiff, M. A. (1996). Defining personal training. In S. Roberts (Ed.), *The business of personal training* (pp. 3–6). Leeds, UK: Human Kinetics.
- Rossi, T., Pavey, A., Macdonald, D., & McCuaig, L. (2015). Teachers as health workers: Patterns and imperatives of Australian teachers’ work. *British Educational Research Journal*, 42, 258–276. doi:10.1002/berj.3197
- Royal College of Physicians. (2012). *Exercise for life—physical activity in health and disease*. London, UK: Royal College of Physicians.
- Rozas, L. W., & Klein, W. C. (2010). The value and purpose of the traditional qualitative literature review. *Journal of Evidence-Based Social Work*, 7, 387–399. doi:10.1080/15433710903344116
- Rupp, J. C., Campbell, K., Thompson, W. R., & Terbizan, D. (1999). Professional preparation of personal trainers. *Journal of Physical Education, Recreation & Dance*, 70(1), 54–56. doi:10.1080/07303084.1999.10605653
- Sallis, J., & McKenzie, T. (1991). Physical education’s role in public health. *Research Quarterly for Exercise & Sport*, 62(2), 124–137. doi:10.1080/02701367.1991.10608701
- Sallis, R. E. (2009). Exercise is medicine and physicians need to prescribe it! *British Journal of Sports Medicine*, 43(1), 3–4. doi:10.1136/bjism.2008.054825
- Sassatelli, R. (2010). *Fitness culture: Gyms and the commodification of discipline and fun*. New York, NY: Palgrave MacMillan.
- Schempp, P. (1993). Constructing professional knowledge: A case study of an experienced high school teacher. *Journal of Teaching in Physical Education*, 13(1), 2–23. doi:10.1123/jtpe.13.1.2
- Smith Maguire, J. (2001). Fit and flexible: The fitness industry, personal trainers and emotional service labor. *Sociology of Sport Journal*, 18, 379–402. doi:10.1123/ssj.18.4.379
- Smith Maguire, J. (2008). *Fit for consumption: Sociology and the business of fitness*. London, UK: Routledge.

- Sowden, S. L., & Raine, R. (2008). Running along parallel lines: How political reality impedes the evaluation of public health interventions. A case study of exercise referral schemes in England. *Journal of Epidemiology & Community Health*, 62, 835–841. doi:10.1136/jech.2007.069781
- Sparling, P. A. (2005). Are wellness/fitness programs benefitting participants' movement and mobility in daily life? *Quest*, 57(1), 162–170. doi:10.1080/00336297.2005.10491850
- Stacey, D., Hopkins, M., Adamo, K., Shorr, R., & Prud'homme, D. (2010). Knowledge translation to fitness trainers: A systematic review. *Implementation Science*, 5(1), 28. doi:10.1186/1748-5908-5-28
- Storer, T. W., Dolezal, B. A., Berenc, M. N., Timmins, J. E., & Cooper, C. B. (2014). Effect of supervised, periodized exercise training vs. self-directed training on lean body mass and other fitness variables in health club members. *Journal of Strength & Conditioning Research*, 28, 1995–2006. doi:10.1519/JSC.0000000000000331
- Thomas, G. (2011). *How to do your case study: A guide for students and researchers*. London, UK: Sage.
- Thompson, W., Bushman, B., & Desch, J. (2010). *ACSM's resources for the personal trainer* (3rd ed.). London, UK: Lippincott Williams and Wilkins.
- Trost, S. G., Blair, S. N., & Khan, K. M. (2014). Physical inactivity remains the greatest public health problem of the 21st century: Evidence, improved methods and solutions using the '7 investments that work' as a framework. *British Journal of Sports Medicine*, 48, 169–170. doi:10.1136/bjsports-2013-093372
- Turok, F. (2013). *UKActive chairman's speech*. Retrieved from http://www.ukactive.com/downloads/managed/Fred_Turok_ukactive_Chairman_Summit_Speech.pdf
- U.S. Bureau of Labor Statistics. (2014). *Occupational outlook handbook, 2014–15 edition, fitness trainers and instructors*. Retrieved from <http://www.bls.gov/ooh/personal-care-and-service/fitness-trainers-and-instructors.htm>
- Warburton, D. E., Bredin, S. S., Charlesworth, S. A., Foulds, H. J., McKenzie, D. C., & Shephard, R. J. (2011). Evidence-based risk recommendations for best practices in the training of qualified exercise professionals working with clinical populations. *Applied, Physiology, Nutrition & Metabolism*, 36(s1), s232–265. doi:10.1139/h11-054
- Wilkinson, C., & Bretzing, R. (2011). High school girls' perceptions of selected fitness activities. *Physical Educator*, 68(2), 58–65.
- Williams, N., Hendry, M., France, B., Lewis, R., & Wilkinson, C. (2007). Effectiveness of exercise-referral schemes to promote physical activity in adults: Systematic review. *British Journal of General Practice*, 57, 979–986. doi:10.3399/096016407782604866
- World Health Organization (WHO). (2010). *Global recommendations on physical activity for health*. Geneva, Switzerland: Author.
- Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). London, UK: Sage.