

Contemporary undergraduate physiotherapy education in terms of physical activity and exercise prescription: practice tutors' knowledge, attitudes and beliefs

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Abstract

Objectives Practice tutors' evaluation to (i) establish current physical activity and exercise promotion and prescription curriculum content and (ii) their knowledge, attitudes and beliefs concerning physical activity and exercise prescription in clinical education, in terms of contemporary and emerging health trends and priorities.

Design A cross sectional survey employing a questionnaire and focus groups.

Participants All practice tutors delivering physiotherapy undergraduate education in four physiotherapy schools in Ireland ($n = 38$) were invited to participate. Thirty participated giving a response rate of 79%.

Methods Two methods of data collection were employed. Clinical content questionnaires were administered, the results of which informed follow-up focus groups. Focus group transcriptions were analysed using the 'Framework Analysis' method.

Results 66% of practice tutors were unhappy with their own knowledge and felt they required further training in the following areas: strategies for changing physical activity behaviour; exercise promotion and prescription for public health; exercise prescription for lifestyle related disease. Main themes emerging from the focus groups were (i) perceptions of the physiotherapist's role, (ii) perceptions of the practice tutor's role and (iii) facilitators and barriers to change.

Conclusion In terms of physical activity and exercise prescription education, practice tutors identified a need for further education to improve their knowledge base. However, their attitudes and beliefs relating to physiotherapists' and educators' role in terms of teaching contemporary and emerging health trends and priorities were mixed. Results of this study provide useful data to inform future physiotherapy curricula development in terms of physical activity and exercise content.

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Keywords: Practice tutors; Survey; Focus groups; Physical activity and exercise prescription; Undergraduate physiotherapy clinical education

Background

Although projecting the demands on the physiotherapy profession in the 21st century is challenging, in the United Kingdom and Ireland, we are unquestionably presented with two key determinants. Firstly, the shift from secondary to primary care, with a reoriented focus towards prevention and health promotion, in addition to ill health [1,2] and secondly, the conditions that are dominating illness care for the foreseeable future are incontestable and extensive given demographics and lifestyle profiles and changing life expectancies [3].

Over the past 60 years 'diseases of lifestyle', where smoking, unhealthy diet, excess alcohol and physical inactivity are key contributing factors, have become the leading cause of morbidity and premature death both in the United Kingdom [4] and in the Republic of Ireland [5]. However, in the last half of the century, the attention within the physiotherapy profession to lifestyle related conditions, their risk factors and manifestations has failed to become as dominant as one might have predicted based on their escalating prevalence and the profession's previous response to population health priorities [6].

Research has shown that small changes in health behaviours such as an increase in physical activity can result in major effect sizes [7]. There is typically a risk reduction of approximately 30% for those achieving the recommended

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levels of 30 minutes aerobic exercise on most days of the week [8]. Furthermore, of clinical relevance is that small gains in exercise capacity can result in marked gains in activities of daily living [9]. For example, a change in physical activity alone, from the age of 30 to 80 years, based on actual rates of disease and death of physical inactive and active people in the Danish population, would translate into a gain in life expectancy of between 2.8 and 7.8 years for men and between 4.6 and 7.3 years for women depending on the degree of activity increase [10].

With such evidence to support the effectiveness of physical activity and exercise in preventing and managing lifestyle related diseases that are dominating illness care for the foreseeable future and a global shift in health care focusing on wellness and prevention, the future of physiotherapy may lie in ensuring graduates are competent in physical activity and exercise prescription. In concordance with this, physiotherapy professional bodies worldwide have testified that it is crucial that “the profession enhance its perception, knowledge and skills in contemporary and emerging health trends and the delivery of care in several areas including health promotion and wellness and physiotherapists as exercise experts” [11].

To address these needs, physical activity and exercise prescription needs to be core to undergraduate education. Furthermore, for these competencies to translate successfully into future clinical practice, emphasis is required not only in the academic setting but also, and perhaps more importantly in the clinical aspect of the educational process. Clinical education plays the fundamental role in enhancing student learning [12], in developing the next professional generation [13] and in promoting the physiotherapy profession [14].

In the Republic of Ireland and the United Kingdom, each student must complete 1000 supervised clinical hours. In Ireland, clinical education is provided by senior physiotherapists, with the support of practice tutors [15]. Practice tutors are specifically employed by the Irish health service to oversee the therapy professions' clinical education. They are based full time in the clinical setting but do not carry a clinical caseload. Each practice tutor is affiliated to one of the universities. Their role is to work closely with the senior physiotherapists to optimise the students' clinical learning experience. It includes providing support in supervision and assessment of the students, provision of feedback throughout clinical placement, organisation of relevant tutorials and in some cases, a contribution to teaching on the academic curriculum in preparation for clinical placement.

As in Ireland, the majority of physiotherapy clinical education in the UK is provided by senior physiotherapists (clinical educators). However, support for the clinical educators is provided by university academic tutors. These tutors differ from the practice tutors in that they are employed by and based in the university and visit the clinical sites on a regular basis [16].

Study aims

The aims of this study were twofold. Firstly, to establish current physical activity and exercise clinical curriculum content and secondly, to explore practice tutors' knowledge, attitudes and beliefs concerning physical activity and exercise prescription in physiotherapy clinical education, in relation to contemporary health trends and priorities.

Methods

Design

A cross sectional survey employing both a questionnaire and focus groups was employed.

Recruitment

A purposeful sample was used. All practice tutors that deliver physiotherapy undergraduate education in four physiotherapy schools in Ireland ($n = 38$) were invited to participate.

Permission to undertake the study was obtained from the head of each school. A letter was sent to the clinical education co-ordinator from each of the four participating physiotherapy schools explaining the purpose of the study. They in turn contacted individual practice tutors, informed them of the study and invited them to participate. All educators signed a consent form prior to study commencement.

Data collection

Questionnaire

Each tutor was sent a questionnaire. The questionnaire was developed specifically for use in this study. It was piloted and amended prior to inclusion in the study. It consisted of the following seven key categories:

- (a) Fundamentals of physical activity and exercise
- (b) Exercise science
- (c) Physical activity and exercise testing and measurement
- (d) Exercise prescription and planning
- (e) Physical activity and exercise prescription for healthy populations
- (f) Physical activity and exercise prescription for clinical populations
- (g) Physical activity and exercise promotion

These categories were derived based on evidence based literature relating to physical activity and exercise, national and international recommendations for physical activity and priorities for contemporary healthcare and physiotherapy accrediting bodies' recommendations (World Confederation of Physical Therapy, Chartered Society of Physiotherapy and Irish Society of Chartered Physiotherapy).

Table 1
Intra-rater and inter-rater reliability.

	No. valid cases	Kappa value	Standard error	Significance (<i>P</i>)
Intra-rater reliability: coder 1 test/re-test				
Perceptions of the physiotherapist's role	35	0.91	0.06	<.001
Perceptions of the practice tutor's role	30	0.84	0.09	<.001
Barriers and facilitators	35	0.87	0.08	<.001
Inter-rater reliability: coder 1/coder 2				
Perceptions of the physiotherapist's role	35	0.82	0.08	<.001
Perceptions of the practice tutor's role	30	0.90	0.07	<.001
Barriers and facilitators	35	0.87	0.07	<.001

A total of 73 questions relating to specific topics within these key sections were included. Practice tutors were asked to tick yes or no, indicating whether they covered the topic with students. Four open ended questions invited tutors' to add any comments in terms of how confident they felt about teaching, and what resources they felt would improve physical activity and exercise prescription clinical education. On return, questionnaires were analysed by the researchers and the results were used to inform the follow-up focus groups.

Focus groups

One focus group was conducted in each of the four participating universities. Each session was conducted by two facilitators. The principal researcher (GO'D) moderated each session and the clinical education co-ordinator from each university was seated at the periphery of the group, observing behaviour and noting significant comments. Each focus group was scheduled for 90 minutes. A series of open-ended questions, based on questionnaire results (outlined in **Box 1**) were posed. Once complete, the moderator closed the session by thanking the participants and informing them that the data would be returned to them for review once transcribed. Immediately after each session, the moderator and observer conducted a debriefing session that facilitated later analysis.

Data analysis

A combination of quantitative and qualitative analysis was employed. Descriptive statistics were used to illustrate the practice tutors' profiles and questionnaire results. Focus group transcriptions were analysed using the 'Framework Analysis' (FA) method [17]. This form of analysis, as detailed in **Fig. 1**, provides five systematic and visible stages to the analysis process and although the general approach is inductive, it allows for the inclusion of a priori as well as emergent concepts when coding [17]. Intra-rater and inter-rater reliability were determined using the method described by Miles and Huberman [18]. Intra and inter-rater reliability were deemed to be acceptable levels (Table 1) [18].

Results

Demographics

Thirty practice tutors (male $n = 3$) completed the questionnaire and 28 (male $n = 2$) participated in the focus groups ($n = 4 \times 7$ participants). Almost half of the tutors (47%, 14/30) qualified (BSc Physiotherapy) from a UK based university. The remainder qualified from one of each of the three Dublin based physiotherapy schools (University College Dublin, Trinity College Dublin and the Royal College of Surgeons in Dublin). The average number of years qualified was 9.7 (SD = 7.2) and the average number of years in tutor posts was 3.5 (SD = 3.4). All tutors possessed the degree of Bachelor of Physiotherapy and 23% (7/30) possessed a postgraduate qualification in physiotherapy or a related field. Fifty percent (15/30) reported their clinical experience was in musculoskeletal physiotherapy. However, the majority (53%, 16/30) of tutors were involved in educating students in all core areas (musculoskeletal, cardiorespiratory, neurology, elderly care). Table 2 provides further information on the practice tutors' demographics.

Table 2
Demographic data for the Clinical educators ($n = 30$).

	Mean (SD)
Age (years)	36.0 (6.9)
No. of years qualified as a physiotherapist	9.7 (7.2)
No. of years employed as a clinical educator	3.5 (3.4)
	<i>n</i> (%)
Male	3 (10%)
Qualifications	
BSc Physiotherapy	23 (77)
MSc Manual Therapy	2 (7)
MSc Sports Physiotherapy	1 (3)
MSc Neurology	1 (3)
MSc Public Health	1 (3)
MSc Research	2 (7)
Clinical experience	
Musculoskeletal	15 (50)
Cardiorespiratory	8 (27)
Neurology	5 (17)
Elderly care	1 (3)
Paediatrics	1 (3)

Questionnaire

Detailed questionnaire results are presented in [Table 3](#)

The main areas identified by the practice tutors as being included were exercise science and exercise prescription for specific areas traditionally related to physiotherapy such as cardiorespiratory and neurological disease. The main areas identified as being absent from current clinical education were (i) guidelines relating to physical activity and exercise prescription, for example World Health Organisation recommendations and American College of Sports Medicine guidelines, (ii) psychological strategies for changing behaviour in relation to physical activity, (iii) exercise prescription for healthy, sedentary populations, (iv) exercise prescription for lifestyle related diseases, such as obesity and diabetes type II and (v) health promotion.

Thirty three percent (10/30) of the practice tutors reported a specific interest in exercise prescription. Sixty six percent (20/30) reported that they did not have the required knowledge, and/or confidence to educate students in the areas reported previously. All tutors expressed interest in attending training sessions within their affiliated institutions in order to expand their knowledge in physical activity and exercise prescription.

Focus groups

The focus groups explored practice tutors' knowledge, attitudes and beliefs concerning physical activity and exercise prescription in physiotherapy clinical education, in relation to contemporary health trends and priorities, focusing on the areas identified from the questionnaire that are currently from the clinical curricula. Three predominant emergent themes were identified from the analysis: (i) perceptions of the physiotherapist's role, (ii) perceptions of the practice tutor's role and (iii) facilitators and barriers to change. All results are supported by direct quotations from the focus group transcripts. All quotes are referenced with a number from 1 to 4; corresponding to each institution's focus group and number 1 to 7; corresponding to the individual practice tutor.

Perceptions of the physiotherapist's role

The majority of the tutors did not see health promotion and disease prevention within the remit of the existing physiotherapist's role. They felt the physiotherapist's role was in the management of disease and more specifically, in the management of conditions traditionally associated with physiotherapy such as musculoskeletal, cardiorespiratory and neurological conditions:

“At the end of the day, no matter what, our expertise relates to dealing with people that have problems. If someone is healthy and well, they don't need to see us. They can go to the gym

and see a gym instructor for their exercise programme. They don't need us”. (3; 2)

A small number (20%, 6/30) acknowledged that the prevention and management of lifestyle related disease is something that the profession must embrace for future practice:

“Right now, physiotherapy as a profession is mostly hospital based, dealing with acute medical conditions. We don't see nor are we referred healthy people. But, I think we will have to become competent in the management of the ‘new’ diseases and promoting exercise and healthy living to prevent them” (1; 7)

Perceptions of the practice tutor's role

The practice tutors did not see it as their responsibility to educate the students in relation to contemporary health trends (health promotion and prevention) and the management of lifestyle related disease:

“Does health promotion and prevention form part of the core physiotherapy curriculum? I'm not sure that it does. For us as educators, I feel we have enough to try and cover with what we already teach. If they are included, something else will have to be taken out to make room for them and what should that be”. (3; 6)

Barriers and facilitators to changing current educational practice

All four groups of tutors highlighted their own lack of knowledge and expertise in the area of physical activity and exercise prescription as a barrier to educating students and changing practice. In addition to lack of knowledge, the practice tutors cited lack of resources and the context in which they were working as an obstacle to physiotherapy providing a broader array of services:

“I don't know what the current Irish guidelines are for physical activity. I don't know what our current inactivity trends are or the prevalence of lifestyle related diseases like obesity. If I don't know them, then I obviously won't be teaching the students about them. And as far as I am aware the majority of my colleagues are in the same boat”. (4; 1)

The threat of other professions taking on the role of “exercise prescription expert” and a lack of employment in the traditional physiotherapy restorative role were identified as the main motivating factors for change:

“The future is now in preventative health and that is where it should be and the physiotherapy curriculum should be somewhat directed by this. I think we as physiotherapists will loose out to other professions if we don't latch onto this because that is where future jobs are going to be”. (2; 1)

Table 3
Clinical content questionnaire results.

In your opinion and in relation to **Physical Activity and Exercise**, do your students learn about the following topics during their clinical placements:

	Yes, <i>n</i> (%)
(a) Fundamentals of physical activity and exercise	
Definitions for physical activity, exercise and physical fitness	20 (67)
Health and its determinants	11 (37)
General benefits of physical activity	22 (73)
Physical inactivity as a public health risk	9 (30)
Physical inactivity as a risk factor for disease	9 (30)
Current national and global trends in inactivity ^a	5 (17)
Dept of Health publications relating to physical activity ^a	2 (7)
World Health Organisation; Physical Activity Recommendations ^a	2 (7)
American College of Sports Medicine; Physical Activity Guidelines ^a	4 (13)
(b) Exercise science	
Physiological basis for exercise	17 (57)
Cardiovascular and respiratory response to exercise	22 (73)
Muscle physiology responses to exercise	17 (57)
Thermoregulation and exercise	5 (17)
Principles in motor learning/control	20 (67)
Principles of mechanics and physics related to human movement	20 (67)
Psychological factors that influence behaviour	13 (43)
Physical activity behaviour theories and models ^a	4 (13)
Methods for changing exercise behaviour ^a	2 (7)
Strategies to enhance adherence	13 (43)
Analysis of movement	28 (93)
Posture analysis	28 (93)
Gait analysis	27 (90)
Functional analysis	19 (63)
(c) Physical activity/exercise testing and measurement	
Safety and preparticipation screening (e.g. PAR-Q)	8 (27)
Clinical contraindications to exercise testing	17 (57)
Health and safety considerations and risks related to exercise	20 (67)
Laboratory testing	5 (17)
Field testing	13 (43)
Monitoring response (heart rate, RPE, BP)	19 (63)
Strength (e.g. 1 RM)	22 (73)
Flexibility	23 (77)
Anthropometry ^a	2 (7)
Subjective measurement, i.e. questionnaires and exercise diaries	15 (50)
Objective measurement, i.e. accelerometry and pedometry ^a	2 (7)
(d) Exercise prescription and planning	
Components of health related fitness (Strength, CV, flexibility, body comp)	20 (67)
Principles of prescription (FITT: frequency, intensity, time and type)	16 (53)
Principles of training (overload and specificity)	16 (53)
Components of an exercise session (warm-up, cool-down, etc.)	24 (80)
Rate of progression	24 (80)
Maintenance of the training effect	13 (43)
Plyometric training	8 (27)
Aerobic exercise programmes	23 (77)
Resistance exercise programmes	30 (100)
Flexibility exercise programmes	30 (100)
Group exercise classes	25 (83)
Setting objectives and short/long term goal setting	23 (77)
Outcome measures	24 (80)
(e) Physical activity and exercise prescription for healthy populations	
Children and adolescents ^a	5 (16)
Sedentary healthy adults ^a	5 (16)
Older adults (+65)	12 (40)
Pregnancy/postpartum ^a	3 (10)
High performance athletes ^a	1 (3)
(f) Physical activity and exercise prescription for clinical populations	
Cardiovascular disease	25 (83)
Respiratory disease	24 (70)

Table 3 (Continued)

	Yes, <i>n</i> (%)
Arthritic	23 (77)
Obesity ^a	5 (17)
Diabetes type 2 ^a	2 (7)
Stroke	22 (73)
Multiple sclerosis and other neurological conditions	22 (73)
Fibromyalgia	14 (47)
Chronic low back pain	20 (67)
Chronic pain	17 (57)
Osteoporosis	22 (73)
Anxiety and depression ^a	5 (17)
Oncology ^a	5 (17)
Haematology ^a	2 (7)
(g) Physical activity and exercise promotion	
Physical activity within health promotion	8 (27)
Strategies encouraging physical activity	6 (20)
Environmental influence on physical activity ^a	3 (10)
Economic influence on physical activity ^a	1 (3)
Societal and cultural factors influencing physical activity ^a	2 (7)
Best practice interventions to promote physical activity	6 (20)

^aTopics identified as least covered in the clinical curriculum.

Discussion

The results of this study provide the basis for concrete professional development activities with potential to improve the congruency between undergraduate physiotherapy clinical education and the requirements for practice within a transforming health care context.

In terms of content, areas traditionally associated with physiotherapy physical activity and exercise prescription education such as cardiorespiratory and neurological disease were reported to be well covered during students' clinical education. The main areas identified as being absent from clinical education were psychological strategies for changing physical activity behaviour; exercise prescription for prevention and wellness and exercise prescription for lifestyle related diseases such as obesity and diabetes type 2.

No similar studies investigating practice tutors' knowledge, attitudes and beliefs concerning physical activity and exercise prescription have been conducted that we are aware of making it difficult to compare these findings. One recent Australian study investigated the knowledge, confidence and perceptions of clinical physiotherapists ($n=319$) and physiotherapy students ($n=279$) regarding the promotion of physical activity for wellness and prevention in clinical practice [19]. This study revealed that overall the physiotherapists and the students reported having adequate knowledge and skills to undertake this role. However, only one third of the respondents could name the national physical activity recommendation for Australian adults [19], prompting the authors' to suggest that the capacity of Australian physiotherapists to give their patients physical activity advice for non-treatment purposes could be improved if it was better embedded into the physiotherapy curriculum.

In the United States, for the past decade, the American Physical Therapy Association's (APTA) Commission on Accreditation of Physical Therapy Education (CAPTE)

emphasize inclusion of health promotion in entry-level curricula [20]. There have been CAPTE evaluation criteria for health promotion and disease prevention since the early 1990s.

It is only in recent years that UK and Irish physiotherapy accrediting bodies (CSP and ISCP) have started to place increased emphasis on public health and its importance in entry-level physiotherapy education.

The findings from the follow-up focus groups provide several potential explanations as to why these areas are omitted from undergraduate clinical education. Firstly, the practice tutors do not see health promotion and disease prevention within the remit of the existing physiotherapist's role. Over time, physiotherapy has become synonymous with restorative care, with a focus on treatment to address impairment, injury and disability. Compared to traditional specialities such as musculoskeletal and gerontology, prevention and wellness and management of contemporary lifestyle related conditions is only an emerging force in physiotherapy [21].

Secondly, because the practice tutors did not see contemporary health trends and the management of lifestyle conditions as core components of the clinical curriculum, they did not see it as their responsibility to include these areas in the students' exercise education.

Compared to subject matter that has traditionally been offered in physiotherapy undergraduate curricula, the area of wellness and prevention and management of lifestyle related disease are relatively new concepts [21] and few physiotherapists possess an "expertise" in wellness. Accordingly, it can be speculated that fewer physiotherapists appreciate the uniqueness of wellness and prevention and recognise their value for future practice opportunities. Results from this study support this assumption. The practice tutors identified, as barriers to educating the students, their own lack of knowledge in terms of exercise prescription for healthy populations and lifestyle related disease.

Furthermore, the tutors felt the context in which the clinical placements occur was not conducive to educating students in terms of prevention and wellness, as the majority of clinical placements are in acute hospital settings where the emphasis is on illness care. For future physiotherapists to become effective in preventative care and management of lifestyle related disease a diversification in clinical placements is required. Placements in primary care and community settings are compulsory to provide students with experience of prescribing physical activity for public health. Only then will physiotherapy students have the opportunity to develop the skills necessary to play a central role in advancing public health, focusing attention to health in the well population and managing an individual's presenting problem in the context of the individual's overall health risks and presenting condition [3,6].

Conclusion

This evaluation was designed to assess the scope of undergraduate physiotherapy clinical education experience in terms of physical activity and exercise prescription for contemporary and emerging health trends, through engagement with the practice tutors. Results indicate a strong need for re-evaluation of 'physical activity' and 'exercise promotion and prescription' education. The current Irish clinical undergraduate physiotherapy curricula still solely focus on impairment, injury and disability. There is a lack of explicit exercise content in relation to public health and lifestyle related disease.

Epidemiological trends and priorities, the elements of health, proficiency in promoting self-efficacy and behavioural change and identifying health risk need to be included in undergraduate physiotherapy education, to optimally prepare future physiotherapy graduates for contemporary practice.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.physio.2011.04.348.

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