

Health Competency Standards in Physical Therapist Practice

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38 Region of the World Confederation for Physical Therapy: AFR: Africa; AWP: Asia Western
39 Pacific; EUR: Europe; North America Caribbean: NAC; SA: South America
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ABSTRACT

Although the physical therapist profession is the leading established, largely non-pharmacological health profession in the world and is committed to health promotion and non-communicable disease (NCD) prevention, these have yet to be designated as core physical therapist competencies. Based on findings of three Physical Therapy Summits on Global Health, addressing NCDs (heart disease, cancer, hypertension, stroke, diabetes, obesity, chronic lung disease) has been declared an urgent professional priority. The Third Summit established the status of health competencies in physical therapist practice across the five WCPT regions with a view to establish health competency standards, this article's focus. Three general principles related to health-focused practice emerged along with three recommendations for its inclusion. Participants acknowledged that specific competencies are needed to ensure health promotion and NCD prevention are practiced consistently by physical therapists within and across WCPT regions, i.e., effective counseling for smoking cessation, basic nutrition, weight control, and reduced sitting and increased activity/exercise in patients/clients, irrespective of their presenting complaints/diagnoses. Minimum accredit-able health competency standards within the profession including use of the WCPT-supported Health Improvement Card were recommended for inclusion into practice, entry-to-practice education, and research. Such standards are highly consistent with the mission of the WCPT and the World Health Organization. The physical therapist profession needs to assume a leadership role vis-à-vis eliminating the gap between what we know unequivocally about the causes of and contributors to NCDs and the long-term benefits of effective sustained non-pharmacological lifestyle behavior change, which no drug nor many surgeries have been reported to match.

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3 The First and Second Physical Therapy Summits on Global Health (2007 and 2011) paved the
4 way for the Third Summit (2015), the focus of this perspective, and its findings related to
5 establishing minimal accredit-able health competency standards in the profession. These
6 standards relate to health promotion and disease prevention with special reference to non-
7 communicable diseases (NCDs). The NCDs were a priority given they are leading causes of
8 morbidity, disability, and premature death worldwide, and increasingly so in low- and middle-
9 income countries.

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17 The prime focus of the three Summits was on physical therapists' role in reducing the knowledge
18 translation gap between the evidence supporting healthy lifestyle choices and the practices of
19 health professionals, including physical therapists, to promote healthy lifestyles with targeted
20 examination/assessment of every client's/patient's health and lifestyle behaviors, and targeted
21 interventions including health education and exercise prescription. In terms of effectiveness in
22 promoting lifelong health and preventing NCDs, few if any drugs compare to the benefits of
23 healthy lifestyles. Thus, non-pharmacologic approaches such as effective health education and
24 physical activity/exercise prescription, both consistent with physical therapist practice, are a
25 priority in addressing contemporary global health priorities as declared by the World Health
26 Organization (WHO) and the United Nations as well as the World Confederation for Physical
27 Therapy (WCPT).
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38 In this article, the frame of reference for establishing health competency standards in physical
39 therapist entry-level education and practice is detailed first. Then, the outcomes of the Third
40 Summit are described: one, the overarching principles that emerged regarding the integration of
41 health competencies into physical therapist practice; and two, specific recommendations
42 regarding examination/assessment of health status and NCD risk factors including lifestyle
43 behaviors, and interventions that can be readily integrated into practice to maximize health and
44 minimize NCD risk in every patient/client.
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51 **Frame of Reference**

52 Health protection can be viewed as an element of the construct of health promotion and disease
53 prevention for which physical therapists have a major role in terms of serving as consultants to
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3 policy makers and government. Health protection focuses on social and environmental
4 determinants of health involving communities and workplaces which align with the planetary
5 health movement (Figure 1). This perspective is consistent with the WCPT-supported
6 International Classification of Functioning, Disability and Health (ICF) and the role of
7 contextual factors including the environment and personal attributes in determining a person's
8 health status.¹ That patients/clients have access to the integration of 'best' evidence-based
9 practices including health education and health promotion and NCD prevention services is
10 stipulated in the first principle of ethical practice by the WCPT.²
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19 The gap between the unequivocal evidence regarding the relationship between lifestyle and
20 NCDs and lack of systematic intervention to address this gap in health services has been referred
21 to as the 'ultimate knowledge translation gap'.³ An international benchmarking study of physical
22 therapist curriculum content related to health promotion and NCD prevention supports this
23 contention,⁴ first documented by Rea and colleagues.⁵ Given that education is a primary focus of
24 standard practice, physical therapists are uniquely positioned to assume a leadership role in
25 knowledge translation related to NCDs and their risk factors, and minimization of these.
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32 One knowledge translation model is the Coordinated Implementation Model that shows a multi-
33 sectorial process for health protection, health promotion and NCD prevention.^{6,7} Although
34 physical therapists have the potential to protect and promote health and prevent NCDs at a
35 significant level clinically, they also have a social responsibility to share their knowledge to
36 effect change at the organizational and societal health policy levels and pave the way for other
37 health professional groups.⁸ The study reported by Ketkar and colleagues⁹ is one example of
38 physical therapists assuming a leadership role and spear-heading a health promotion and NCD
39 prevention initiative in the workplace, a health service setting for employees, as a basis for
40 informing institutional health policy. Using established screening and evaluation methods for
41 NCDs, the investigators documented poor dietary practices, sub-optimal blood pressures and
42 physical inactivity as leading modifiable risk factors in the cohort, a cohort that might be inclined
43 to be more mindful of their lifestyle practices and status. The data provided a basis for targeted
44 health education programs for health services employees. With particular reference to two
45 injurious lifestyle behaviors, namely, inactivity and smoking, Lein and colleagues¹⁰ described a
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3 model to integrate health promotion and wellness into standard physical therapist practice. This
4 model paves the way for establishing a database of examination/assessment tools and
5 interventions for effecting positive and sustained lifestyle behavior change.
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10 Two seminal studies have added particular weight to the argument supporting dedicated health
11 promotion and NCD prevention in every patient/client interaction. First, Ford and colleagues¹¹
12 reported that in a cohort of over 23,000 adults, those with healthier lifestyle behaviors and
13 related attributes (i.e., not smoking, healthy eating practices, optimal body mass, and regular
14 physical activity), reduced the risk of several NCDs over several years. Specifically, the risk for
15 type 2 diabetes was reduced by 93%, myocardial infarction by 81%, stroke by 50%, and various
16 cancers by 36%. Even if not all four lifestyle behaviors or related attributes were present, the risk
17 of developing one or more chronic lifestyle-related NCDs decreased commensurate with the
18 number of positive lifestyle factors to which individuals adhered. Second, Blanchard and
19 colleagues¹² reported that even with a diagnosis of cancer, the proverbial wake-up call,
20 survivors' lifestyle behaviors were alarmingly poor, i.e., in over 9,000 survivors, only 14.8 to
21 19.1% adhered to the recommendations of five daily servings of fruit and vegetables and 29.6 to
22 47.3% adhered to physical activity recommendations. However, 82.6 to 91.6% were not
23 smoking. Only 5% met all three general health recommendations (not smoke, consuming at least
24 five servings of fruit and vegetables daily, and engaging in at least 150 minutes weekly of
25 moderately intense physical activity/exercise. Thus, lifestyle behavior change warrants targeting
26 with inbuilt mechanisms for lifelong sustainability, given that having a potentially terminal
27 diagnosis does not appear to constitute sufficient motivation to change lifestyle behavior. On an
28 encouraging note however, the investigators reported that health-related quality of life improved
29 with each additional positive lifestyle behavior reported. Thus, the need for lifestyle behavior
30 change warrants being systematically evaluated and a targeted intervention planned, to
31 continuously and seamlessly support sustained healthy lifestyles in patients/clients.
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50 The social and economic costs of lifestyle behaviors are well recognized by governments. One
51 seminal study examined lifestyle behaviors of registrants with the National Health Service in the
52 United Kingdom over one year. Based on a sophisticated economic analysis, the investigators
53 reported that the greatest contributors to healthcare costs in descending order of economic impact
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3 were diet, smoking, overweight, alcohol consumption, and physical inactivity.¹³ Further, recent
4 evidence supports that these costs can be mitigated with lifestyle intervention including modest
5 nutritional changes.¹⁴ Thus, compelling evidence was provided for systematically addressing
6 these as a priority in every patient/client.
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11 Further evidence for physical therapists embracing health promotion and NCD prevention in
12 their patients/clients regardless of presenting problems and diagnoses, comes from the
13 Behavioral Risk Factor Surveillance reports on the health of people with disabilities.¹⁵ Not only
14 are people with disabilities more likely to report poorer health status than those without
15 disabilities, but also they are several times more likely to smoke, be overweight, and be inactive.
16 These findings suggest that healthy lifestyles practices are vitally important for individuals with
17 physical disabilities as for those without such disabilities. Furthermore, optimal nutrition has
18 been reported to be of singular importance in relation to the incidence of physical impairment.
19 Hagan and colleagues¹⁶ reported in a cohort of 54,782 from the Nurses' Health Study that greater
20 adherence to healthy eating practices was associated with lower risk of functional impairment.
21 This is a provocative notion in that by addressing eating practices of patients/clients, physical
22 therapists may reduce such risk and, should impairments occur, their severity could be mitigated
23 and response to interventions enhanced. Lastly, the negative consequences of the standard
24 western diet have been well documented in favor of more healthful evidence-based nutritional
25 regimen. For example, greater adherence to a Mediterranean-type plant-based diet has been
26 associated with reduced vascular disease and less frailty in the aged¹⁷ and superior health
27 outcomes overall.
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43 Over the past decade, the WCPT has made strides in increasing the profile of NCDs in global
44 physical therapist practice with the publication of several noteworthy reports. The WCPT, a
45 member of the World Health Professions Alliance (WHPA), was actively involved in the
46 development of the Health Improvement Card (HIC) with four other established leading health
47 professions, namely, dentistry, nursing, medicine, and pharmacy.¹⁸ The HIC provides a strategic
48 starting point for examining/assessing health and NCD risk, and implementing lifestyle behavior
49 change interventions. There is little evidence however, that the HIC has been systematically
50 adopted by any of WCPT's member organizations. We based this observation on direct questions
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3 to the Summit participants about their familiarity with the tool and their knowledge of their or
4 others' use of it clinically.
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8 Based on these lines of reasoning and evidence, the Summit team initiated a global forum to
9 review the status of health promotion and NCD prevention within the profession, and tools
10 related to health competencies including use of the HIC; and how these could be more
11 effectively profiled and operationalized to facilitate their uptake into practice. This would be a
12 singular achievement not only for the physical therapist profession but as an exemplar to other
13 health professions.
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19 20 21 **The Physical Therapy Summits on Global Health**

22 An outcome of the First Physical Therapy Summit on Global Health was that physical therapists
23 are the leading, established, largely non-pharmacologic health professionals; and they have a
24 primary role in addressing global health priorities, specifically, the lifestyle-related NCDs.¹⁹ No
25 doubt exists that for prevention and management of the chronic stages of the NCDs, non-
26 pharmacologic interventions (health education, and physical activity and structured exercise) are
27 the interventions of choice as noted in clinical practice guidelines related to the prevention and
28 management of NCDs. Outcomes of the Second Physical Therapy Summit on Global Health
29 **were global regional action plans** that focused on health and NCD prevention in every
30 client/patient.²⁰ These were developed by regional working groups in a World Cafe™ dialogue
31 format and published. Based on the two previous Summits, the Third Physical Therapy Summit
32 on Global Health reflected on evidence-based health examination/assessment tools and health
33 behavior change strategies/interventions/approaches across the WCPT regions and establishing
34 health competency standards across regions.²¹
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46 47 **Health Competency Standards: Principles and Recommendations**

48 Three overarching principles underlying health competencies in physical therapist practice
49 emerged: their theoretical and practice foundations; the construct of health-focused practice; and
50 that health promotion and NCD prevention need to be shared competencies across health
51 professionals. Recommendations for health competencies include minimum standards for
52 examination/assessment tools to inform health promotion and NCD prevention interventions),
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3 and for behavior change interventions. Interventions broadly focused on counseling for smoking
4 cessation, healthy nutrition, maintaining a healthy weight, reduced sitting and being physically
5 active, optimal sleep, and manageable stress. Part of the intervention competencies was knowing,
6 based on the examination/assessment, when to refer the client/patient to another established
7 health professional.
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13 **Principle: Incorporate into Physical Therapist Education and Practice the Theoretical and** 14 **Practical Foundations of Health Competencies**

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16 A theoretical and practice foundation reflected in the established specialty of behavioral
17 medicine, served as a foundation to guide and inform lifestyle-related behavior change
18 competency standards within established physical therapist practice. Behavioral medicine is
19 defined by the International Society for Behavioral Medicine (ISBM) as ‘..an interdisciplinary
20 field dealing with the integration of psychosocial, behavioral and biomedical knowledge of
21 relevance for health in health protection and health promotion, diagnosis, treatment and
22 rehabilitation’.²² An offshoot of behavioral medicine is lifestyle medicine that singularly focuses
23 on the knowledge, skills and competencies needed to protect and promote health.²³ The
24 American College of Preventive Medicine (ACPM) and key stakeholders propose having an
25 important role in ensuring lifestyle medicine practices and programs are based on proven and
26 effective methods of preventing and controlling disease.²⁴ Clinical practice guidelines for
27 management of chronic NCDs typically have lifestyle behavior change as the priority.
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39 **Principle: Incorporate into Physical Therapist Education and Practice Health-focused** 40 **Practice**

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42 Health-focused physical therapist practice can be defined as health promotion and NCD
43 **prevention** practices that target a patient’s/client’s overall health and wellbeing consistent with
44 the WHO’s definition of health.^{19,25} Such practice is underpinned by the WCPT-supported ICF¹
45 and the definitions of health protection and health promotion by The Ottawa Charter²⁶ (**Figure**
46 **1**). Health is defined by the WHO as a complete state of physical, social and emotional
47 wellbeing, not simply the absence of disease; and health promotion is defined as ‘..the process of
48 enabling people to increase control over, and to improve, their health. To reach a state of
49 complete physical, mental and social well-being, an individual or group must be able to identify
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3 and realize aspirations, to satisfy needs, and to change or cope with the environment'. The WHO
4 has long advocated for lifestyle behavior change given the evidence supporting its long-term
5 health benefit.²⁷ Further, in its Global Strategy on Diet, Physical Activity and Health,²⁸ the WHO
6 promoted and provided support for educating health professionals about healthy nutrition and
7 physical activity, either within existing programs or in dedicated workshops, as an essential
8 component of the curricula for entry-level health professions' education and post-graduate
9 professional development.²⁹

16 **Principle: Incorporate into Physical Therapist Education and Practice That Health** 17 **Competencies Need to Be Shared Across Health Professionals**

19 An example of an algorithm for inter-professional collaborative practice in health protection and
20 promotion practice appears in an article by Dean and colleagues,³⁰ and is designed to ensure that
21 such practice is expedient, seamless, and cost-effective. The process is reflexive, i.e., the
22 examination/assessment, initiation, intervention and reinforcement, is done by the physical
23 therapist, or initiated by the therapist and with referral to another health professional. Then on-
24 going evaluation would occur throughout the entire episode of physical therapist services. To
25 effectively adopt this framework, the process depends on the health professional's self-efficacy
26 to effect lifestyle-related behavior change in patients/clients, i.e., enhance their self-efficacy to
27 effect such change and when to refer to other professionals. Previous work supports the fact that
28 physical therapists value health protection and health promotion practice, yet they report a lack
29 of confidence in their capacity to effect such change.³¹⁻³⁴ Barriers toward health behavior change
30 have been supported by Abaraogu and colleagues.³⁵⁻³⁷ Dean and colleagues²⁹ recently published
31 an example of how one entry-to-practice physical therapist education program has attempted to
32 address this in the absence of accreditation standards for such practice.

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46 Lifestyle behaviors like medications can interact not only positively or negatively by altering the
47 pharmacodynamics of medications, but the benefits of individual lifestyle behavior change may
48 also augment the benefit of other positive lifestyle behaviors, additively or multiplicatively.
49 These benefits include smoking cessation; a healthy anti-inflammatory diet (i.e., plant-based
50 diets such as the Mediterranean diet^{38,39} rather than the standard Western diet⁴⁰ (also referred to
51 as the American diet); reduced or non-harmful alcohol consumption; healthy body weight; less
52 sedentary behavior; regular physical activity and exercise; better quality sleep; and less

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3 unmanageable stress, anxiety, and depressive symptoms. The standard Western diet has been
4 reported to underline the NCD pandemic in Western societies and other societies that are
5 increasingly adopting this eating pattern.⁴⁰
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10 A component of team work to which physical therapists aspire is the notion of cross referral. For
11 coordinated seamless health care, physical therapists like other health professionals need to
12 identify what is within their scope of practice given health competencies, and what is not. They
13 need competencies with respect to patients who need to be referred to other health professionals,
14 both for physical and **mental health issues**.
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20 Health-based studies are needed to elucidate these relationships so that the invasive practices of
21 physicians and surgeons can be better integrated with non-invasive practices, such as those of
22 physical therapists (the largest established non-invasive health professional group). Over time, as
23 the benefits of a healthy lifestyle take effect for the patient/client, health professionals can better
24 titrate invasive and non-invasive interventions and procedures to the patient's/client's needs. By
25 so doing, drug usage can be reduced and surgery avoided or replaced with less invasive or non-
26 invasive interventions.
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34 **Recommendations for Standards for Health Competencies**

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36 We recommend that the minimum standards for health competencies that emerged from the
37 Third Physical Therapy Summit on Global Health be adopted into globally-endorsed
38 accreditation standards for physical therapist practice. Further, these competencies should be
39 recommended for adoption by all established health professions to ensure that seamless attention
40 to the patient's/client's needs is consistent across health service providers, and that due priority is
41 given by health professionals to reduce the risk of patients/clients falling through the cracks in
42 terms of overall health and NCD risk factors. Broad categories of lifestyle behavior change
43 appear in **figure 2** and more specific details on a dedicated website.⁴¹
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51 Extension of these proposed minimum standards to and adoption by other established health
52 professions in addition to physical therapy, have been described elsewhere.^{42,43} Health protection
53 and health promotion practices need to be inter-professional collaborative efforts as they will
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3 only be recognized as important by patients/clients through a unified effort in knowledge
4 translation/uptake across professions.^{42,43}
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7 Multiple health-based tools exist with respect to examination/assessment of health and wellness,
8 lifestyle behaviors, and NCD risk factors. We have compiled those deemed most readily
9 integrated into physical therapist practices with due consideration of their usefulness and
10 psychometric soundness. In addition, we have compiled a list of behavioral change theories and
11 models that underpin effective lifestyle-related behavior interventions in the context of a physical
12 therapist episode of care (**Figure 3**).
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18 To be effective, lifestyle behavior change needs to be practiced consistently across health
19 professions. Against this background, the Centre of Excellence of Health Competencies for
20 Health Professionals that profiles the requisite tools for health-focused practices was officially
21 opened during the third Summit. This database is accessible through the Centre's website⁴¹ and
22 is relevant to health professional educators, researchers, program accreditors, administrators,
23 consultants and practitioners. The purpose of the Centre's website is to provide updated
24 evidence-informed tools for examination/assessment outcome for several leading lifestyle
25 behaviors and related intervention/strategies to support positive health behaviors and address
26 negative health behaviors. These tools have also been selected to be practiced in the contexts of
27 busy and time-constrained health professionals' practices. Although tools consistent with
28 minimum standards of health competencies are provided, additional tools are available for health
29 professionals who wish to maximize the outcomes of their health competencies in
30 patients'/clients' lifestyle behavior change within their practices. Integral to health protection and
31 health promotion practices are inter-professional practices and cross referral to appropriate health
32 practitioners. In summary, a psychosocial perspective to physical therapist practice was viewed
33 as a foundation requirement based on the principles encompassed in the established specialty of
34 behavioral medicine.²²
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49 **Recommendation: Health and Lifestyle Behavior Examination/Assessment Tools be Core** 50 **Physical Therapist Competencies** 51

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53 Core competencies related to health and lifestyle behavior examination/assessment tools are
54 broadly categorized in **figure 2**. The tools are organized as follows: those related to general
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3 health measures; those related to lifestyle-related behaviors and attributes and, those related to
4 NCD risk factors, including tools listed to examine/assess self-efficacy for behavior change and
5 readiness to change a lifestyle behavior. More detailed examples of tools for
6 examination/assessment and intervention and related resources appear in the Appendix.
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11 The WHO has developed a comprehensive instrument for risk factor surveillance.⁴⁴ The STEPs
12 Instrument includes behavioral measures, such as tobacco use, alcohol consumption, diet,
13 physical activity, and sedentary behavior as well as other risk factors related to blood pressure,
14 blood sugar, and blood lipids. Sections can be used selectively, e.g., diet and physical activity
15 and sedentary behavior, to provide a patient's/client's baseline and outcome measures following
16 intervention.
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22 Special mention needs to be made of the HIC (**Figure 4**) which was developed and endorsed by
23 the members of the WHPA,^{18,45,46} with the WCPT having a prominent role. The HIC provides an
24 easy entry into assessment of a patient's/client's biometrics and key lifestyle-related behaviors
25 by the physical therapist and then provides recommendations to make based on a color-coded
26 system of green (meeting the criteria for a healthy living for each behavior and low NCD risk),
27 amber (cautionary NCD disease risk), and red (high NCD disease risk).
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34 Various other tools are available to the physical therapist for assessing health attributes/lifestyle
35 practices that commonly underlie NCD risk. Clinical examination/assessment tools that can be
36 readily used clinically include the cardiovascular examination/assessment tool by Grundy and
37 colleagues,⁴⁷ CanRisk published by the Canadian Diabetes Association,⁴⁸ and several risk
38 assessment tools published by Harvard University Medical School.⁴⁹ These are examples of tools
39 that have been well studied and evaluated, and are short and easy to administer clinically. The
40 fact that NCDs share common risk factors makes these options compelling to use clinically.
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49 **Recommendation: Health Protection and Promotion, and NCD Prevention Interventions be** 50 **Core Physical Therapist Competencies** 51

52 Core competencies related to lifestyle behavior change interventions appear in **figure 2** and more
53 specifically in the Appendix. After the examination/assessment of the various lifestyle-related
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3 characteristics and personal attributes, the patient's/client's readiness to change each lifestyle-
4 related behavior is established based on the transtheoretical model.⁵⁰ Stages of change include
5 Pre-contemplative, Contemplative, Preparation, Action, Maintenance, and potential Relapse. If
6 the patient/client is at least at the Contemplative stage of readiness to change a behavior, then the
7 5 A's, endorsed by the WHO, can be initiated, i.e., Ask, Advise, Assess, Assist, Arrange.⁵¹ If the
8 patient/client however is not expressing readiness to change a targeted behavior, i.e., Pre-
9 contemplative stage, then the 5 R's can be initiated, i.e., Relevance, Risks, Rewards, Roadblocks,
10 Repetition.⁵²
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19 **Recommendation: Behavior Change Theories and Models Underpin Core Health**
20 **Promotion and NCD Prevention Competencies in Physical Therapist Practice**

21 Multiple behavior change theories and models have been advanced and underpin behavioral
22 medicine, the elements of which can be used by physical therapists to effectively promote health
23 behavior change in their patients/clients. These include Social Learning Theory,⁵³ the
24 Transtheoretical Model,⁵⁰ the Health Promotion Model,⁵⁴ the Health Belief Model,⁵⁵ Theory of
25 Planned Behavior⁵⁶ and goal setting principles. Practical behavioral approaches useful as a
26 component of examination/assessment and **intervention** include cognitive behavior therapy,⁵⁷
27 behavior modification or operant conditioning,⁵⁸ mindfulness and meditation,⁵⁹ and motivational
28 interviewing.⁶⁰
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38 Practitioner as well as patient/client self-efficacy warrants special attention given it has been a
39 long-standing construct in health service delivery and forms the basis of many patient/client self-
40 management approaches. Self-efficacy has become a central construct in health promotion and
41 NCD prevention education. For patients/clients to develop self-efficacy, health professionals
42 need self-efficacy in assessing the need for health promotion/NCD prevention education in their
43 patients/clients and in selecting and providing the appropriate intervention(s) with targeted and
44 tailored health promotion recommendations and advice, and evaluation of their effects. This
45 process is comparable to examination/assessment and prescription of interventions that constitute
46 established physical therapist practices. In a special report to the American Heart Association
47 with respect to the need to examine translational applications of dietary recommendations to
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3 maximize long-term adherence, Van Horn and colleagues⁶¹ described several methods, yet they
4 acknowledged this was an area of knowledge deficit for practitioners.
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8 Originally, Bandura conceptualized self-efficacy largely as the function of two factors: the
9 importance to the person of the behavior to change, and the confidence of that individual to
10 effect health behavior change through knowledge and skill set.⁵³ Comparable to other accredited
11 physical therapist competencies deemed best practice by professional bodies, these competencies
12 need to be taught progressively and integrated across semesters and years in the academic
13 program. This is assured through various multimodal formats, e.g., the theoretical foundations
14 followed by clinical practice of the competencies, initially in the classroom and then clinically
15 under supervision.
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24 Clinical reasoning related to lifestyle behavior change has been documented as a unique
25 competency by Elvén and colleagues.⁶² These investigators published a clinical reasoning model
26 for health behavior change with special reference to physical therapists increasing physical
27 activity in their clients/patients. The model informed both by established theory and evidence
28 elucidates a process algorithm for examining/assessing patients/clients, and potential tools for
29 effecting person-centered management. The model is reflexive, i.e., response driven, to
30 maximize health behavior change outcomes and their sustainability.
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37 Based on the extant literature, health professionals need to serve as health role models as well as
38 advocates. With respect to health service delivery, physicians who practice healthy lifestyle have
39 been reported to not only be more likely to address health promotion with their
40 clients/patients^{63,64} but also are viewed to be more credible by patients.⁶⁵ Consistent with this
41 body of knowledge, we support the principle of The Patient Promise⁶⁶ initiative that provides a
42 public forum for health professions to pledge to both live a healthy lifestyle and support this in
43 their patients. The pledge has three components: “what I understand about healthy living as a
44 healthcare professional”; “what healthy living practices I endeavor to adhere to”; and a signed
45 on-line public declaration of commitment and endorsement to the initiative’s values and
46 practices. To serve as credible and effective health professionals, physical therapists should be
47 viewed foremost as role models in their roles as health professionals, who practice healthy living
48 consistent with their commitment to health.
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Future Directions

This article provides a basis for including health promotion and NCD prevention competencies into physical therapist entry-level education as well as practice, as a means of reducing the knowledge translation gap between what is known about healthy living and NCD risk, and people's lifestyle practices. We acknowledge that establishing standards of health promotion and NCD prevention competencies constitutes a work in progress, which like other scholarly endeavors warrant ongoing scrutiny and refinement.

Physical therapists could well be the first health profession in the world, to be truly that, one committed to the overall health and NCD prevention in each and every client/patient, and to serve as leaders to other health professions. They are uniquely and strategically well-positioned to assume a leadership role vis-à-vis health professionals' integrating lifestyle examination/assessment and interventions into their practices. As the largest established, primarily non-pharmacological profession, we argue that the physical therapist profession needs to assume a leadership role in establishing minimum accredit-able health promotion and NCD prevention competencies that could also be integrated into the practices of medicine and nursing, and potentially dentistry and pharmacy. Such a position is highly consistent with the profession's commitment to best practice and the ethical standards of the WCPT. Incorporating health competencies into standard practice would be a bold initiative, in that it would constitute a 'first' within and across the leading established health professions. Finally, this position is highly consistent and aligned with the tenets of Hippocrates to which all health professionals need to aspire; 'first do no harm' and 'the function of protecting and developing health must rank even above that of restoring it when it is impaired.'⁶⁷

With respect to the United States, Healthy People 2020 has been a primary initiative to improve the health of the population.⁶⁸ It aspires, to many of the same tenets as those of the World Health Organization's documents over the years.⁶⁹⁻⁷¹ Health People 2020 constitutes a nationwide database. This database has provided an evidence base for public health planning in the country and development of health behavior change initiatives across stakeholders. In addition, the database has captured income inequity data, thereby

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3 **enabling stakeholders to better address the social determinants of health in the United**
4 **States, as well. Planning is now underway for Healthy People 2030.⁷² There is opportunity**
5 **for the profession of physical therapy to have input to Healthy People 2030 and direct its**
6 **agenda.**
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10 11 12 **Conclusion**

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14 The existing health knowledge base appears not only sufficient but unequivocal and warrants
15 translation into minimum accredit-able standards of health promotion and NCD prevention
16 competencies in physical therapist practice. Comparable to the teaching of conventional physical
17 therapist competencies in entry-level education programs, health protection and health promotion
18 and disease prevention competencies need to be taught and evaluated in terms of their theoretical
19 foundations, examination/assessment, and interventions supported by informed theories and
20 models. These competencies that physical therapists must initiate and implement, or initiate and
21 refer to other health professionals primarily include counseling for smoking cessation; basic
22 nutrition for maximal health, healing and recovery, and for weight management; sleep hygiene;
23 stress management; as well as systematic evaluation/assessment of physical activity/exercise and
24 prescription. In addition to initiating health education programs with patients, physical therapists
25 need to follow criteria for initiating and referring patients to other health professionals as
26 indicated by an examination/assessment of need. **The profession of physical therapy has a**
27 **responsibility to support global health initiatives of the WHO and the WCPT, in turn**
28 **supporting national initiatives, such as Healthy People 2020 and its successor, Healthy**
29 **People 2030, in the United States.**
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44 **Declaration of Interest**

45 The authors report no conflicts of interest.
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Figure 1. Health Competency Definitions

Health Protection

Although health promotion is subsumed in some definitions of health protection, health protection is often broader to include minimizing exposure to hazards from the environment, occupation and hazardous waste. In addition, health protection can be viewed as distinct from health promotion given that individuals whose health status and lifestyle practices are exemplary, protecting their health vs. necessarily promoting further health improvement is the goal.

Source: Association of Faculties of Medicine of Canada, 2017.⁷³

Health Promotion

Health promotion aims to enhance health through public policy, healthy social and physical environments, healthy lifestyle practices, and personal resilience. ‘Making the healthy choice the easy choice’ is part of the health promotion movement.

‘Health promotion is the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and realize aspirations, to satisfy needs, and to change or cope with the environment. Health is therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being.’

Source: The Ottawa Charter for Health Promotion. First International Conference on Health Promotion, Ottawa, 21 November 1986.²⁶

<http://www.who.int/healthpromotion/conferences/previous/ottawa/en/>

Figure 2. Categories of Health Behavior Change Tools in the Tool Kit of the Centre of Excellence in Health Competencies for Health Professionals: Examination/Assessment and Interventions/Strategies (<http://www.mdh.se/amnen/2.397941> and https://www.mdh.se/polopoly_fs/1.82085!/Menu/general/column-content/attachment/References.pdf).

GENERAL HEALTH STATUS

- Quality of Life
- Life Satisfaction
- Participation in Life

SMOKING PRACTICES

- Assessment/Evaluation/Outcome Measures
- Smoking Cessation Interventions and Strategies

NUTRITION PRACTICES

- Assessment/Evaluation/Outcome Measures
- Interventions and Strategies to Improve Healthy Nutrition

WEIGHT LOSS

- Assessment/Evaluation/Outcome Measures
- Interventions and Strategies to Reduce Body Weight

ALCOHOL CONSUMPTION

- Assessment/Evaluation/Outcome Measures
- Intervention and Strategies to Reduce Unhealthy Alcohol Consumption

SEDENTARY BEHAVIOR

- Assessment/Evaluation/Outcome Measures
- Interventions and Strategies to Reduce Prolonged Sitting

PHYSICAL ACTIVITY

- Assessment, Evaluation/Outcome Measures

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3 Interventions and Strategies to Increase Physical Activity to Healthy Levels
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7 STRUCTURED EXERCISE PROGRAMS

8 Assessment/Evaluation/Outcome Measures

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10 Self-report Measures

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12 Objective Measures

13 Interventions and Strategies to Increase Structured Exercise
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17 SLEEP HEALTH: QUALITY AND QUANTITY

18 Assessment/Evaluation/Outcome Measures

19 Interventions and Strategies to Promote and Support Healthy Sleep Patterns
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24 MENTAL HEALTH: WELLBEING (STATES OF ANXIETY, STRESS, AND DEPRESSIVE SYMPTOMS)

25 Assessment/Evaluation/Strategies

26 Interventions and Strategies to Promote and Support Optimal Mental Health
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31 Note: Physical therapists need to assess the mental health of patients/clients and promote positive
32 mental health and wellbeing. For patients/clients with mental health challenges, physical
33 therapists should support and reinforce the services they are receiving from others. With respect
34 to scope of practice, physical therapists may address depressive symptoms but not primary
35 clinical depression or pathological mental illness for which a qualified mental health professional
36 is indicated.
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Figure 3. Theories and Models of Behavior Change that Underpin Health Promotion and Non-communicable Disease Prevention Examination/Assessment and Interventions

Patient-centered care

Readiness to change lifestyle-related behaviors (Transtheoretical Model)⁵⁰

Health Belief Model including outcome expectations⁵⁵

Health Promotion Model⁵⁴

Patient Autonomy Scale⁷⁴

Assessment of fear avoidance and catastrophizing

Self-efficacy (general; self-efficacy for a given health behavior change)⁵³

Decision balance analysis: Identifying facilitators and barriers to changing lifestyle behavior

Goals and goal setting (SMART-EE, i.e., Specificity, Measurable, Achievable, Relevant, Timely, and Enjoyable and Engaging

Motivational interviewing⁶⁰

Factors influencing motivation and adherence

Cognitive behavior therapy⁵⁷

Behavior modification (operant conditioning)⁵⁸

Clinical reasoning model of health behavior change⁶²

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3 **LEGEND FOR FIGURE 4.**
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5 **Figure 4.** Health Improvement Card (Source: World Health Professions Alliance 2017, with
6 permission)¹⁸
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8 *See attached file*
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For Peer Review Only

Appendix. Examples of Lifestyle-related Examination/Assessment Tools and Strategies/Interventions to Effect Sustained Health Behavior Change (modified from Dean E, Söderlund A. *The Orthopaedic Physiotherapist and Health-based Practice*. In: Grieve's Modern Manual Therapy. *The Vertebral Column*. 4th Ed. Elsevier. Eds. J. Boyling, FA Jull, J. Lewis, Elsevier: London, UK, 2015).

GENERAL HEALTH STATUS AND DISEASE RISK ASSESSMENT

CanRisk Are You At Risk for Diabetes? <https://canadiantaskforce.ca/wp-content/uploads/2016/05/2012-type-2-diabetes-canrisk-en.pdf>. Accessed February 11, 2019.

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SMOKING CESSATION

Examination/Assessment Tools

Smoking history and current practices
The WHY Test (unvalidated questionnaire that helps to identify why the person smokes, i.e., stimulation, handling, pleasure, relaxation, habit, weight, image, and social)

Strategies and Interventions

Brief advice (Bodner and Dean, 2009; Frerichs et al, 2012)
Referral to physician for potential pharmaceutical support and/or health psychologist/counselor

OPTIMIZING NUTRITION AND HEALTHY WEIGHT

Examination/Assessment Tools

Detailed multi-day nutrition logs can be laborious and de-motivating, and may lack validity
Weight, height, and body mass index

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Waist-hip ratio (Zhu et al, 2002; Janssen et al, 2004; Yusuf et al, 2004; Yusuf et al, 2005)
Use established and accepted food guides to establish a patient's typical consumption patterns related to servings of the basic food groups daily to identify gross excesses and deficits: servings of vegetables, fruit, whole grain, refined foods, dairy, animal protein (meat, poultry vs. fish sources), sweets
Added sweetener, salt, butter and oil
Food preparation: steam, bake and broil over frying and deep frying
Fast food meals per week
DETERMINE Your Nutritional Health Questionnaire (Morris et al, 2009)
Mini-Nutritional Assessment-SF (Morris et al, 2009)
Establish need for nutritionist intervention (beyond basic recommendations)

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Strategies and Interventions

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Irrespective of body mass and waist-hip ratio, most patients can benefit from nutritional assessment and reinforcement of healthy food choices
My Plate
Implement basic nutrition education based on established guidelines, e.g., plant-based diets such as the Mediterranean diet)
DASH diet
Patients who are overweight and obese do require special consideration, however health diet will help to modify body composition
Referral to dietician or nutritionist

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MOTIVATING PATIENTS TO BE PHYSICALLY ACTIVE

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Examination/Assessment Tools

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International Physical Activity Questionnaire (IPAQ website)(long and short versions in multiple languages that classify a person's general physical activity as low, medium, or high)
Pedometer to establish physical activity level, and whether is sedentary (<5000 step criterion) (Tudor-Locke et al, 2004)

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Strategies and Interventions

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Action planning worksheet (Rhodes et al 2009)
Exercise barrier sheet (Rhodes et al 2009)
Exercise enjoyment sheet (identifies suitable activities based on proximity, aesthetics, and interest) (Rhodes et al 2009)
International Physical Activity Questionnaire (IPAQ website)(long and short versions in multiple languages that classify a person's general physical activity as low, medium, or high)
Pedometer to establish physical activity level, and whether is sedentary (<5000 step criterion) (Tudor-

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3 Locke et al, 2004)
4 Action planning worksheet (Rhodes et al, 2009)
5 Exercise barrier sheet (Rhodes et al, 2009)
6 Exercise enjoyment sheet (identifies suitable activities based on proximity, aesthetics, and interest)
7 (Rhodes et al, 2009)
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10 11 12 OPTIMIZING SLEEP

13 14 Examination/Assessment Tools

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17 Sleep inventory questionnaire (17 questions) (Coren, 2009)
18 (helps to establish evidence for patient's sleep debt/deprivation and risk of related health problems)
19 Need to distinguish pathologically disturbed sleep versus functionally/behaviorally disturbed sleep
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21 22 Strategies and Interventions

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25 Sleep is a physiologic necessity but its quality and effectiveness to restore is highly behaviorally-
26 dependent
27 Sleep hygiene recommendations:
28 Regular hours
29 Quiet, no light (including electronic clock/TV lights), comfortable ventilated room
30 Avoid heavy meals, caffeine, alcohol within hours of bed
31 May need to refer to sleep specialist and potential for sleep laboratory investigation
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34 35 36 STRESS MANAGEMENT

37 38 Examination/Assessment Tools

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41 Distinguish acute (daily hassle) type stress and chronic stress
42 Psychological Stress Measure-9 (9 questions) (Lemyre et al, 2009)
43 (evaluates short-term stress, past 4-5 days)
44 Holmes Rahe Social Readjustment Stress Scale (Holmes-Rahe Stress Test)
45 (evaluates major life stressors over the past year and predicts health risks for the subsequent year)
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53 Methods based on principles of cognitive behavioral therapy and motivational interviewing
54 Establish need for referral to other professionals
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RESOURCES

General Health Status

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Lifestyle scorecard

- helps you understand how you can improve your health by changing your lifestyle
- allows your health professional to help you improve your health and well-being
- enables you to own and personalise your health improvement action plan

		GOAL	CAUTION	HIGH RISK
HEALTHY DIET	-	An unhealthy diet increases your risk of being overweight, obese and developing oral diseases		
	+	Eat more fruit and vegetables every day and seek advice on lowering salt and saturated fats		
PHYSICAL ACTIVITY	-	Lack of physical activity increases your risk of cardiovascular diseases, diabetes and some cancers		
	+	Increase the amount of time spent on physical activities at home and at work and engage in sports		
TOBACCO USE	-	Tobacco use increases your risk, and the risk of those around you, of cancer, lung diseases, heart attack and stroke		
	+	Stop smoking from today onwards		
USE OF ALCOHOL	-	Harmful use of alcohol increase your risk of mental illnesses, and liver damage and other alcohol related deaths		
	+	Limit the amount of alcohol that you drink each day		

HEALTH IMPROVEMENT ACTION PLAN

my commitment		my goal: ■
my action		target date:
health professional action		

For details, visit www.whpa.org

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