



Balance and Falls in Survivors of Cancer

Min H. Huang, PT, PhD

Board-certified Clinical Specialist in Neurological Physical Therapy, Physical Therapy Department, College of Health Sciences, University of Michigan-Flint, Flint, MI

For survivors of cancer, balance impairments and fall risks emerge throughout the survivorship trajectory at a level exceeding age-related declines.¹⁻⁵ In 2015, a coalition of researchers led by the Cancer and Aging Research Group identified interventions to prevent falls as a research gap in older survivors of cancer.⁶ In 2016, a group of interdisciplinary experts assembled by the Rehabilitation Medicine Department of the Clinical Center at the National Institutes of Health recommended adopting the tools used in the geriatric population to assess balance in survivors of cancer.⁷ Five years have passed since these national leaders in rehabilitation oncology pointed out the importance of addressing balance problems and falls to optimize functional outcomes of survivors. Much of what we know and practice to address these issues in survivors of cancer has originated from the research evidence in the neurologic and geriatric populations. This special issue on Balance and Falls gives us a glimpse of the advances in this area of research and practice for the oncology population.

In the MeSH (Medical Subject Headings) database, balance is matched to the term “postural balance,” referring to “A posture in which an ideal body mass distribution is achieved. Postural balance provides the body carriage stability and conditions for normal functions in stationary position or in movement, such as sitting, standing, or walking.” Balance is fundamental to many aspects of life’s situations, allowing the individuals to safely perform daily activities, participate in work and recreation, engage in community events, and fulfill their societal roles. In 2009, Horak et al⁸ presented a multisystem approach to assess balance using a new instrument, the Balance Evaluation Systems

Test (BESTest). The BESTest examines 6 systems of postural control: biomechanical constraints (eg, strength and range of motion), stability limits (eg, reaching forward), anticipatory postural adjustments (eg, sit to stand, stand on one leg), postural responses (eg, compensatory stepping), sensory orientation (eg, eyes closed and stand on foam), and stability in gait (eg, changing speed or dual tasking). The BESTest identifies the specific systems linked to balance impairments. This examination approach for balance is particularly relevant to the oncology population because cancer and its treatment impact multiple body systems.

In 2005, the Prevention of Falls Network Europe (ProFane) recommended defining a fall as “an unexpected event in which the individuals come to rest on the ground, floor, or lower level.”^{9(p1619)} The ProFane definition has since been adopted extensively in research studies. In 2011, the American and British Geriatrics Societies published the Clinical Practice Guideline (CPG) for prevention of falls in older adults. The CPG delineated multifactorial causes of falls and identified balance impairments as a leading risk factor of falls.¹⁰ Many research studies about falls in survivors of cancer did not provide an operational definition for falls, and the responses of the participants about falls could be misled or inaccurate. Oncology clinicians and researchers need to explain the definition of falls to the survivors before asking them about their history of falls. The STEADI (Stop Elderly Accidents, Deaths, and Injuries) initiative developed by the Centers for Disease Control and Prevention outlines asking questions about falls and concerns about balance and walking as the first step in fall prevention during a clinical encounter.¹¹

In the recent years, the Academy of Oncologic Physical Therapy (APTA Oncology) has played a pivotal role in raising the awareness of unique challenges in balance and falls experienced by survivors of cancers. A few examples of important work accomplished by the Academy members include the recommendations for clinical measures of balance by the Cancer Evaluation Database to Guide Effectiveness (EDGE) Task Force in 2015¹² and 2019,¹³ the creation of Balance and Falls Special Interest group (SIG) in 2018,¹⁴ the “Cross-Collaboration to Reduce

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Correspondence: Min H. Huang, PT, PhD, Physical Therapy Department, College of Health Sciences, University of Michigan-Flint, 2157 William S. White Bldg, 303 E. Kearsley St, Flint, MI 48502 (mhhuang@umich.edu).

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Preventable Falls: An Oncology, Geriatrics, Neurology Balance & Falls SIG Tri-Alliance Symposium” at the Combined Sections Meeting in 2020,¹⁵ and the ongoing development of the Clinical Practice Guideline on Chemotherapy-Induced Peripheral Neuropathy led by the APTA Oncology together with the American Occupational Therapy Association and the American Congress of Rehabilitation Medicine.

The articles in this special issue reflect the multiplicity of balance and falls in survivors of cancer. Dr Wechsler’s scoping review reveals the overwhelmingly negative effects of chemotherapy on balance, gait, and falls across the survivorship continuum and elucidates the directions for future research. Dr Marker’s work tested the psychometrics of the single-leg stance test, a quick, easy, and readily accessible screening tool for balance in survivors of diverse cancer diagnoses. Dr Blackwood’s work underscores the importance role of cognition, specifically the executive function, with relation to balance and mobility in survivors of cancer. Dr Covington’s work highlights the effect of fear of fallings on time use and life experiences, mental health, and physical function in survivors of cancer. Dr Broderick and colleagues detailed the adverse effects of neck and head cancer treatment on balance, neck proprioception, and range of motion in a case series. Our time has come to explore and use the technology for assessing balance, as being advocated in the Research Round-up written by the founding chair and leader of Balance and Falls SIG. Finally, all oncology clinicians face a difficult ethical dilemma when treating survivors at the advanced stage of cancer. I highly encourage everyone to read the Clinical Conversation by the founding chair and leader of the Hospice and Palliative Care SIG and reflect. Physical therapy professionals as the movement science experts are well positioned to manage balance problems and falls with the goals to restore or optimize functional outcomes and quality of life. Ultimately, we must abide by the decisions perceived as important and meaningful to our patients.

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