

Preventive health through inspiratory muscle training

Dr Francesco V Ferraro

Lecturer in Sports Therapy and Rehabilitation, College of Science and Engineering, United Kingdom

Address of Correspondence:

Francesco V Ferraro

Email ID: f.ferraro@derby.ac.uk

Cite This Article as: Ferraro V F. Preventive health through inspiratory muscle training. JRCRS. 2024; 12(4):167-168.

DOI: <https://dx.doi.org/10.53389/JRCRS.2024120401>

Preventive healthcare is at a pivotal crossroads, where innovative interventions like Inspiratory Muscle Training (IMT) are beginning to command the attention they deserve. While traditional exercise regimens (such as resistance training) have long been the cornerstone of health maintenance, IMT is emerging as a vital, complementary tool to improve respiratory function, enhance balance, and elevate overall quality of life. This paradigm shift holds promise for ageing populations, where the stakes for preserving independence and preventing falls are incredibly high.

The Science Behind Inspiratory Muscle Training

Through structured breathing exercises, IMT focuses on strengthening the diaphragm and associated inspiratory muscles. These exercises, often performed with specialised devices (such as Powerbreathe), progressively improve muscle strength and endurance. Research led by Dr Francesco Ferraro and colleagues highlights the profound impacts of IMT, from enhanced maximal inspiratory pressure (MIP) to measurable gains in dynamic balance—key factors in mitigating fall risks and promoting mobility.¹

What sets IMT apart is its dual role in supporting respiratory and postural systems. The diaphragm's involvement in spinal stabilisation and intra-abdominal pressure regulation underscores its importance in maintaining balance, particularly during everyday activities.

As falls remain one of the leading causes of injury and reduced independence among older adults, programmes such as the Otago Exercise Programme (OEP) have traditionally targeted lower limb strength and static balance to address this issue. However, these programmes often

require structured environments and professional supervision, creating accessibility barriers. IMT, by contrast, offers a low-cost, easily adaptable solution that can be performed independently at home. Indeed, in comparative studies, IMT has demonstrated improvements in dynamic balance and walking speed on par with established interventions like OEP.²

Beyond Balance: Expanding IMT's Applications

However, IMT's applications extend well beyond fall prevention. Emerging research underscores its efficacy in managing chronic health conditions such as diabetes, chronic obstructive pulmonary disease (COPD), and even post-stroke recovery. By improving thoracic mobility and reducing breathlessness, IMT empowers individuals to maintain an active lifestyle and perform daily tasks more easily.

For instance, a recent randomised trial demonstrated that IMT combined with conventional exercises significantly enhanced balance, postural stability, and quality of life for diabetic patients.³ Such findings illustrate IMT's potential as a versatile tool in preventive and rehabilitative health strategies.

The above indicates that a shift in perception and policy is required for IMT to reach its full potential in public health. Healthcare providers must recognise the intricate relationship between respiratory health and physical performance. Ensuring that IMT devices and training are accessible—especially for older adults and individuals managing chronic conditions—should become a priority.

Conclusion

The IMT offers a simple yet powerful solution to complex health challenges. Its ability to improve respiratory function, strengthen balance, and elevate quality of life makes it an indispensable tool for preventive healthcare. By championing IMT, we can transform individual lives and breathe new vitality into our broader public health strategies.

References

1. Ferraro FV, Gavin JP, Wainwright TW, McConnell AK. Association Between Inspiratory Muscle Function and Balance Ability in Older People: A Pooled Data Analysis Before and After Inspiratory Muscle Training. *Journal of Aging and Physical Activity*. 2021. <https://doi.org/10.1123/japa.2020-0507>.
2. Ferraro FV, Gavin JP, Wainwright TW, McConnell AK. Comparison of Balance Changes After Inspiratory Muscle or Otago Exercise Training. *PLoS ONE*. 2020. <https://doi.org/10.1371/journal.pone.0227379>.
3. Sheraz S, Malik AN, Ferraro FV, Siddiqi FA. Multifactorial Inspiratory Muscle Training and Its Impact on Respiratory and Functional Parameters of Patients with Diabetic Polyneuropathy—A Randomised Controlled Trial. *Physiotherapy Research International*. 2024. <https://doi.org/10.1002/pri.2127>.

Copyright Policy

All Articles are made available under a Creative Commons "**Attribution-NonCommercial 4.0 International**" license. (<https://creativecommons.org/licenses/by-nc/4.0/>). Copyrights on any open access article published by *Journal Riphah college of Rehabilitation Science (JRCRS)* are retained by the author(s). Authors retain the rights of free downloading/unlimited e-print of full text and sharing/disseminating the article without any restriction, by any means; provided the article is correctly cited. JRCRS does not allow commercial use of the articles published. All articles published represent the view of the authors and do not reflect the official policy of JRCRS.