Total Fusion

Research Strategy

September 2024

**Foreward**

Ageing is now recognised as the greatest risk factor for chronic disease, including dementia and cognitive decline, frailty, cancer, cardiovascular disease and dysregulated inflammation. Preventable mental and physical disease has significant impacts on relationships, employment, financial security, participation in society and on overall life satisfaction.

Despite advances in pharmacology and treatment options, prevention of disease remains the best approach for maximising health span and living a life into old age free of disease. Many disease modifying behaviours are accessible to the population, such as physical activity, dietetics advice and meal delivery services. However, many of the opportunities for preventing disease are beyond the reach of most people and remain in the domain of universities, including access to and participation in innovative anti-ageing programs, access to expert advice and information, and access to infrastructure.

At Total Fusion, we understand that research facilitates opportunity. Opportunity to deepen our understanding of the biology of ageing and disease, opportunity to generate evidence-based information and stay at the forefront of health and wellness by understanding whether interventions are effective, for whom and why. And most importantly, opportunity for our members to access and participate in state-of-the-art programs to optimise their health. Evidence now shows that combining research with practice improves health outcomes in all clinical settings.

For this reason, Total Fusion is aiming to be a leader in healthy aging research. Our facilities enable research across medical science, exercise science and physiology, functional movement and psychology. We collaborate with various universities and medical services’ providers to enhance our research capacity and activities.

This research strategy aims to guide Total Fusion’s research focus and to outline our research priorities. It is intended to provide guidance to our members, to stimulate research collaborations and to facilitate the evolution of the services we offer to continue to provide the most up to date opportunities for our members to optimise their health,

Dr Simon Baarbe

Chief Medical Officer

**Executive Summary**

A research strategy ensures we are doing the right research. TF’s research strategy is built on the central theme that research is a core component for achieving Total Fusion’s vision of offering the most up to date medically and scientifically based strategies for health.

The following principles guide our research decision making:

* Excellence – the research that RF supports must promote excellence and be at the forefront of ageing research
* Focus – TF’s investment in research will focus on the key areas of aging and disease prevention, and be translatable to practice.
* Impact – research should contribute to improved health outcomes, create useful knowledge and have positive impact on individual and populations.
* Equity –research should balance over time across issues such as sex, age and disease groups.
* Leverage – maximise the impact of TF’s financial investment, build research networks, contribute to maintaining TFs position as a leader in health and wellness
* Collaboration and partnership – work actively with disease groups, funders, research networks, universities, medical research institutes, hospitals and health services.
* Investigator driven – lessen vested interests; ensure independence of methodology
* Innovative – reward excellence, focus and impact

At Total Fusion, these principles provide a framework for the integration of research to inform practice and to deliver impactful health outcome for our members.

**Focus**

TF’s will be delivered through three focus areas:

* Biomedical research to focus on the biology of ageing and disease,
* Clinical trial research to determine the effectiveness of pharmacological, complementary and behavourial interventions, and
* Analytical research that utilises data collected as part of our ongoing programs

*Biomedical research*

Organ and tissue dysregulation underpin the rise in chronic diseases of ageing. Improving our understanding between those at various stage of disease and at different ages helps to identify targets for therapeutic targeting and to assess interventions that might be put in place as part of the TF health and wellness programs.

*Clinical trial research*

Translational research requires robust clinical trial evidence to test new treatments and determine appropriate treatment regimens. This research these will focus on new anti-aging pharmacological treatments with robust evidence from related fields, such as the use of rapamycin and its analogues or the use of published anti-senescent therapies.

*Analytical research*

TF collects a range of data from members as part of its various programs, which itself can inform about the effectiveness of various behavioural and clinical activities. These data provide a wealth of information that can directly improve the services provided by TF.

*Case study*

In 2024 TF partnered with Griffith University on a study to investigate the acute immune responses to prolonged intense exercise. Prolonged intense exercise has traditionally thought to result in acute mild suppression of the immune system that increases the risk of catching a respiratory infection. Regular prolonged intense exercise is also purported to reduce the risk of many chronic diseases. New genomic spatial profiling technology now allows for assessing gene expression for all 18,000 protein coding genes in the body. For this study, participants including TF members volunteered to undertake a lab-based cycling challenge and to provide blood and thigh muscle biopsies pre- and post-exercise. This work novel work will help understand changes to the immune system from exercise that helps to inform the effect of physical activity on the immune system.

**Governance**

A medical advisory board has been established with clinical specialists and scientists and can call on other expertise as needed. The board will be chaired by TFs chief medical officer and meet quarterly. The board will recommend potential research activities that may be undertaken or funded through the various TF sites and that align with TF strategic priorities.

**Monitoring and reporting**

This strategy is intended to be flexible and reviewed for alignment with the TF business strategy. Ongoing research will be essential to continue evolving the TF vision to offer the latest in evidence-based health programs. This will be achieved through our focus areas, engaging with our partners and implementing this strategy.