Schedule A

Tanenbaum Institute for Science in Sport

Implementation Plan

April 2022

UNIVERSITY OF TORONTO

Sinai Health

"Sport unites us, inspires us, and offers all people a path toward becoming their best selves.

The Tanenbaum Institute will bring together sports medicine and data science to encourage athletic engagement, drive performance, and accelerate recovery."

— Dr. Larry M. Tanenbaum, O. C.

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1. Executive Summary

TANENBAUM INSTITUTE OVERVIEW

The Tanenbaum Institute for Science in Sport will be a globally recognized **centre of excellence for high-performance sport science and sport medicine**. The Tanenbaum Institute combines and leverages the immense strengths of three partners—the research enterprises, academic teaching, learning programs, clinical resources, large and diverse varsity athlete base, and training facilities of the University of Toronto's Faculty of Kinesiology & Physical Education (KPE), the Temerty Faculty of Medicine at the University of Toronto, and Sinai Health—all in the heart of the Greater Toronto Region.

The Institute will catalyze research into a diverse range of disciplines, driving empirically based outcomes that will serve high performance athletes including para-athletes and athletes representing other diverse and underrepresented communities. This work will lead to new knowledge informed by data and analyses generated by the Institute's research teams, and the creation of strategies and interventions that will:

» Enhance and sustain athlete performance, health, wellness, and safety

» Reduce risk of injuries and maltreatment

» Accelerate recovery from training, competition, and injuries

» Advance high-performance sport in a manner that is safe, welcoming, inclusive and accessible to all

» Contribute to the advancement of diversity, equity and inclusion through the activities of the Institute

The Institute will attract a wide range of scientific leaders to enhance the GTA as a global hub for high performance sport, and will include cutting-edge knowledge generation in areas such as mild traumatic brain injuries, orthopaedics, regenerative medicine, biomechanics, wearable physiological and training monitoring technologies, technologies in para-sport, mathematical and statistical modelling applied to individual athlete and team analytics, nutrition, individual and team psychology and health, and more.

The Tanenbaum Institute will be led by an internationally recognized Director with experience in creating, leading, and managing human sciences research and development in high-performance sport, sport science, and sport medicine. The Director will promote and attract excellence while ensuring that the Institute's activities are implemented in a climate of equity, inclusion, and collegiality. The Director, in consultation with the Institute's advisory committees, will lead the identification of the Institute's research and clinical priorities, in part by overseeing the Institute-wide Research Accelerator Fund, regular research rounds, symposia, and conferences.

The Tanenbaum Institute will include a strong data science research component in the form of a Chair and Fund in Sport Science and Data Modelling. Leveraging U of T's leadership in the data sciences, AI and machine learning, the Chair will champion the collection, analysis and integration of sport science and sport medicine data across the Tanenbaum Institute, armed with the resources necessary to generate critical new "big data"-driven research insights into maintaining better athlete health, safety and performance.

As a public-facing organization, the Tanenbaum Institute for Science in Sport will focus strongly on knowledge mobilization and community engagement, with an intentional focus on welcoming under-represented populations in the Institute's activities. The Institute's discovery-science approach will drive novel treatments, clinical and scientific interventions. Research will be conducted and communicated through the principles of open science, and the Institute will develop a robust communications plan to share findings with the public.

The Institute will also leverage industry, government, and community partnerships to drive commercialization, participation, and knowledge-sharing. This includes partnering with Maple Leaf Sports & Entertainment (MLSE), sharing knowledge and working productively with select professionals to help better shape research outcomes (see page 11 for details). The Tanenbaum Institute can also extend relationships across the University of Toronto's considerable research networks such as the Schwartz Reisman Institute for Science and Technology and the

Temerty Centre for AI Research and Education in Medicine. The Institute will also capitalize on the Greater Toronto Area as a leading centre for amateur and professional sport by building on existing and forging new partnerships with Sport Canada, Own the Podium, AthletesCan, the Canadian Sport Science Institute, Defence Research & Development Canada, and others.

OPERATIONAL BUDGET & SUSTAINABILITY

Larry and Judy Tanenbaum's generous $20-million investment to create the Tanenbaum Institute for Science in Sport will support the Director and Directorate's Fund for operations, a new Sport Science and Data Modelling Chair and supporting Fund, partner research projects and programs, communications and other funds as needed, and the Institute-wide Research Accelerator Fund. Larry and Judy Tanenbaum's investment will also fund seed grants; research trainees and cutting-edge equipment at KPE; a new professorship for the University of Toronto Sports Medicine Program (UTOSM); programming related to cartilage and hip repair innovations at Temerty Medicine; and leading-edge work in regenerative medicine in sport with a new endowed Tanenbaum Chair in Musculoskeletal Regenerative Medicine at Sinai Health.

As Canada's leading research institution, with a breadth and depth of expertise that spans every discipline and subject, the University of Toronto has a proven track record of leveraging philanthropic investment to generate matching funding and external grant support. As such, the University of Toronto and Sinai Health are pleased to provide $21,517,950 in fully expendable matching funds to amplify Larry and Judy Tanenbaum's $20-million commitment (see p 14 for a full budget breakdown). The Tanenbaum Institute will be further sustained by U of T and Sinai Health's robust administrative, physical, and organizational infrastructure, external grants, industry sponsorships, commercialization projects, and IP. Finally, the University of Toronto and Sinai Health will actively pursue additional philanthropic support as the Tanenbaum Institute becomes recognized as a global centre of excellence in sport science and sports medicine.

FIVE-YEAR PLAN

The Tanenbaum Institute will launch with the signing of the gift agreement between the Larry and Judy Tanenbaum Family Foundation, the University of Toronto, and Sinai Health, followed by the recruitment of the External and Scientific Advisory Committees and the implementation of reporting structures, including regularly scheduled check-ins and the issuing of annual scientific and financial reports. In accordance with University practice, the Director will prepare strategic plans at five year intervals to map out activities that will advance the work of the Institute.

At the start of year one, the Institute will appoint an interim Director and launch a global search for a permanent Director while implementing a robust communications platform including a website, social media presence, annual conference, and symposia. The Institute will also quickly establish and launch the Research Accelerator Fund to drive the Institute's interdisciplinary sport science research, and the Institute partners will oversee recruitment for new positions and priorities including the Chair in Sport Science and Data Modelling with regular reporting (see p 15 for full timeline and details).

FUTURE POTENTIAL

Larry and Judy Tanenbaum's generous $20-million investment to establish the Tanenbaum Institute for Science in Sport creates a strong platform for future growth, which would be made possible through generating additional philanthropic support. This would allow the Tanenbaum Institute to significantly scale up its work in supporting athlete health, health care, safety and well-being. Key opportunities include building on the work of the Chair in Sport Science and Data Modelling by establishing a clinical sport medicine network across the GTA including a central patient database and new patient referral system; adding new chairs and professorships to attract national and international leadership; creating scholarships, fellowships and trainee networks to attract a diverse array of talent and open up new opportunities for cross-disciplinary collaboration and education; and an entrepreneurship program to seed the innovative, marketable ideas in sport science and sport medicine.

GLOBAL LEADERSHIP

There are many academic sport science or sport medicine centres but few with an organizational framework that mandates an integration of sport medicine and sport science. The Tanenbaum Institute for Science in Sport will be recognized as an international leader among world-renowned global sport science and sport medicine research and clinical centres. These include the School of Sport, Exercise and Health Sciences at Loughborough University, the Wits Centre for Exercise Science and Sports Medicine at the University of the Witwatersrand, the Sylvan Adams Sports Institute at Tel Aviv University, and others (see Appendix p 27 for full Environmental Scan).

The Tanenbaum Institute, however, will be unique among these global giants for its joint medical and sport science academic framework at a top-ranked research university; comprehensive, high-performance athlete platform with a diverse patient population; its location in the rich sporting culture of the GTA; connections to industry, government and sports organizations including MLSE; access to the University of Toronto's and Toronto Academic Health Science Network (TAHSN)'s breadth and depth of expertise across fields and disciplines, and commitment to diversity, equity, and inclusion.

2. Tanenbaum Institute for Science in Sport – Vision & Mission

VISION

To be recognized as the world-leading high-performance sport science and sport medicine centre of excellence.

MISSION

The **Tanenbaum Institute for Science in Sport** will catalyze the world-renowned strengths of its three partners in sport science, sport medicine, and clinical care—the University of Toronto's Faculty of Kinesiology & Physical Education, Temerty Faculty of Medicine at the University of Toronto, and Sinai Health. The Tanenbaum Institute will thrive at the intersection of research and practice, translating discoveries into innovations that dramatically impact athlete health and performance across all athlete populations. Those populations include a spectrum that ranges from world class professional and non-professional athletes to those who strive for high performance optimization in recreational sports.

By combining a rigorous academic framework with expert leadership in clinical care, the Tanenbaum Institute will transform Canada's sporting culture, addressing the urgent need to train the next generation of sport physicians and scientists. The Institute will provide an agile organizational framework that takes full advantage of the University of Toronto's and Sinai Health's diverse athlete community, clinical resources, and world-class sporting facilities, expanding access to care for all athletes in need, including para-athletes and athletes from underrepresented communities.

This framework will nurture ground-breaking research, applied knowledge, and experiential learning in sport science and sport medicine.

OUTCOMES

With unparalleled resources and talent across U of T and Sinai Health, the Tanenbaum Institute will significantly advance science and its application with the aim to:

- enhance and sustain competitive performance for athletes of all levels and every background, including para-athletes and athletes representing other diverse and under-represented populations
- augment and amplify physical and mental training effects
- reduce threats to athlete safety, including the threat of athlete maltreatment
- model/predict/reduce the probability of injury
- improve injury recovery length and outcomes
- develop effective nutrition and mental health regimens
- develop more effective measures to identify the severity of sports concussion, and accelerate the rate of recovery and return to play
- develop and assess new innovative commercial technologies and products for applications to high-performance sports
- use data analytics to predict and augment individual and team performance, health and wellbeing, and to improve athlete recruitment outcomes

TRACKING MEASURES OF SUCCESS

As is standard for all University of Toronto-based Institutional Strategic Initiatives (ISIs), the Tanenbaum Institute will annually track and report measures of success to ensure it fulfills its core objectives. These quantitative measures will be combined with detailed qualitative reporting on specific Tanenbaum Institute research findings, clinical impacts, sport science and medicine interventions developed, post-graduation status of trainees, and more. The following table lists anticipated key performance indicators.

Impact Area	Measure
Research Productivity & Recognition	» Tanenbaum Institute researcher-affiliated publications » Citations of Tanenbaum Institute-affiliated publications » National and international awards garnered by Tanenbaum Institute researchers
Sustainability & External Funding	» Number and total of external research grants (government, funding agencies) related to Tanenbaum Institute-affiliated work » New philanthropic/institutional/government funding for the Tanenbaum Institute
Innovation & Commercialization	» Tanenbaum Institute Research Accelerator Fund/Seed Fund applications & awards » Tanenbaum Institute research IP/patents » Tanenbaum Institute-affiliated commercialization projects/startups » Investments in Tanenbaum Institute-affiliated startups
Partnerships	» Interdepartmental research partnerships established across U of T & Sinai Health (faculties, departments, clinics, other ISIs) » External partners (MLSE, sports and governmental organizations, leagues and teams, clinics, institutions), including from diverse/underrepresented communities
Knowledge Translation & Mobilization	» Athletes, coaches, sport organizations, clinicians, and scientists accessing and applying Tanenbaum Institute research across the spectrum of high performance athletes ranging from world class to recreational, including from diverse and underrepresented communities » Attendees/participants/speakers in annual symposia and conferences, including from diverse and underrepresented communities » Website/social media engagement, e-newsletter subscriptions » Media mentions related to Tanenbaum Institute research
Education	» PhD, post doc, and clinical fellowship applicants » Research trainee applicants and awards » Participants in regular Tanenbaum Institute ‘rounds’

3. Role of the Director

The Tanenbaum Institute for Science in Sport's **Director** will lead the Institute in realizing its mission and vision, providing expert leadership, management, and administration. The Director will work with the External and Scientific Advisory Committees to refine and implement the Institute's research foci and foster collaboration among the Tanenbaum Institute, the University of Toronto, the University of Toronto Sports Medicine Program (UTOSM), Sinai Health, the Toronto Academic Health Science Network (TAHSN), and sports science leaders across Canada and beyond.

The Director will also stimulate and promote the Institute's research, including collaborative seed projects that will span the Institute's three partners, with support from the Research Accelerator Fund. This Institute-wide resource will help translate novel findings into effective treatments, interventions, strategies, and commercial products.

The Director will be an internationally recognized leader with executive experience in creating, leading, and managing human sciences research and development in high-performance sport, sport science, and sport medicine. The role will be an open position, appointable as a full professor in U of T's Faculty of Kinesiology and Physical Education or the Temerty Faculty of Medicine. The search will be open to applicants from anywhere.

The office of the Directorate will be housed in one of the Faculty of Kinesiology and Physical Education's premier facilities on U of T's St. George campus in downtown Toronto. The Director will report to the Dean of the Faculty and will receive oversight on Institute activities from the Institute's Executive Committee and support from the Scientific Advisory Committee and the External Advisory Committee.

Areas of responsibility for the Director may include but are not limited to:

- Working with Institute partners to identify annual priorities for the call for the accelerator-funded research proposals
- Representing the Institute in various public forums and engaging with community partners, including BIPOC and para-athlete communities, to build interest in research and outcomes
- Planning, organizing, and overseeing an annual conference covering themes in sport science, training and education, clinical care innovations, and more
- Arranging monthly Institute "rounds" to share innovative ongoing research, new technological breakthroughs, new clinical practices, invited guest speakers, and more
- Participating as a member of search/appointment committees relevant to the Institute's work
- Seeking external and government grants to support the Institute's research infrastructure
- Carrying out relevant research and supervising research trainees (graduate students, post-docs, and research associates) to enrich the Institute's work
- Promoting collaboration among the Institute partners, academic divisions across the University of Toronto, Sinai Health, TAHSN, the GTA, and globally
- Facilitating meetings of the executive, scientific advisory, and external advisory committees

4. Tanenbaum Institute Partner Roles & Coordination

This section outlines the expected research, clinical, and educational roles and responsibilities of the Institute's three partners—U of T's Faculty of Kinesiology & Physical Education, the Temerty Faculty of Medicine at U of T, and Sinai Health. It also details mechanisms that will facilitate cross-Institute coordination and cooperation, helping the Institute become a global leader in sport science and athlete-centred clinical care accessible to all.

SINAI HEATH AND THE DOVIGI ORTHOPAEDIC SPORTS MEDICINE CLINIC – SPORT MEDICINE CLINICAL CARE

Sinai Health will provide clinical resources, expertise, and talent to the Tanenbaum Institute, including leaders in discovery and innovation based at the Lunenfeld-Tanenbaum Research Institute and veteran clinicians based at the Dovigi Orthopaedic Sports Medicine Clinic. The new endowed Tanenbaum Chair in Musculoskeletal Regenerative Medicine will oversee research related to orthopaedic surgery, sports medicine, rehabilitation, and regenerative research. Sinai Health will follow U of T's research ethics guidelines to provide patient referrals for phase one clinical trials, helping evaluate new therapies and fueling advances and interventions in sport medicine and personalized health care for athletes at all levels.

With a newly rebuilt surgical floor, the redeveloped Dovigi Orthopaedic Sports Medicine Clinic will optimize perioperative treatment, offer access to state-of-the-art technologies for diagnostic and therapeutic purposes, and provide an enhanced platform for single-point-of-access athlete care. Sinai Health will also provide access to imaging infrastructure with industry-leading MRI, Ultrasound, CT, and Radiography technologies, helping provide patients real-time multidisciplinary consultation. With existing, cutting-edge rehabilitation facilities and expertise at Hennick Bridgepoint Hospital, Sinai Health will also develop programming for elite para-athletes.

THE TEMERTY FACULTY OF MEDICINE – SPORT MEDICINE EDUCATION & CLINICAL RESEARCH

The Temerty Faculty of Medicine brings the assets and talents of one of the world's top-ranked medical schools to drive research and clinical practice in sport science across the Tanenbaum Institute. A pioneer in regenerative medicine, personalized medicine, and precision medicine, Temerty Medicine includes the leadership of the University of Toronto Orthopaedic Sports Medicine program (UTOSM)[1] and the Faculty's Rehabilitation Sciences Institute.

As a Tanenbaum Institute partner, Temerty Medicine will employ scientific and clinical research to allow athletes to return to sport and competition following injury and enhance athlete outcomes with the new Tanenbaum Professorship in Orthopaedic Sports Medicine. The UTOSM Cartilage Innovation and Restoration Centre at the University of Toronto (CIRCUIT) will lead to new innovations in restorative care, and the Young Adult Hip Innovation Program (YAHIP) will advance the delivery of musculoskeletal care. Temerty Medicine will generate new IP and commercialization projects related to sport medicine and will begin work to establish a central admission and referral network in the GTA related to sports injuries.

1 UTOSM features clinics in Sunnybrook Hospital's Holland Centre, Mount Sinai Hospital, The Hospital for Sick Children, St. Michael's Hospital, the Sunnybrook Health Sciences Centre, Michael Garron Hospital, Toronto Western Hospital, and Women's College Hospital.

U OF T'S FACULTY OF KINESIOLOGY & PHYSICAL EDUCATION, THE GOLDRING CENTRE AND THE MACINTOSH CLINIC – SPORT SCIENCE RESEARCH

U of T's Faculty of Kinesiology & Physical Education (KPE) will fuel discoveries in fundamental and applied research in areas related to physiology, sports nutrition, biomechanics, sport psychology, neurosciences, human movement, sports analytics, coaching, and more. These insights will become the basis for new interventions and approaches across the Institute partners, supported through new Seed Grants and the Institute-wide Research Accelerator Fund. KPE's Goldring Centre for High Performance Sport and the MacIntosh Sport Medicine Clinic will also serve as critical supporting infrastructure, providing an excellent platform for the training, rehabilitation, and testing of athletes as part of the Institute's work, and a large varsity athlete population from which research participants may be drawn in accordance with best ethical practices.

KPE will pursue innovative 'moonshot' sport science research that will yield a wealth of data to support the generation of high-value research grant proposals. KPE will also attract and retain world-class research trainees to support collaborative partnerships and hands-on research opportunities across the Institute and with community and industry partners, such as Maple Leaf Sports & Entertainment (MLSE) and their professional teams, Sport Canada, Own the Podium, AthletesCan, the Canadian Sport Science Institute, Defence Research & Development Canada, the sport nutrition and nutritional supplement sector, and others.

CROSS-INSTITUTE COORDINATION

As an inter-organizational and multidisciplinary centre of excellence, the Tanenbaum Institute will bring together its collective resources and expertise to achieve the Institute's vision of a seamless, discovery-science pipeline from lab to athlete. As a University of Toronto extra departmental unit, the Tanenbaum Institute will also be able to draw from investigators from its partners and across all U of T faculties and divisions in a range of areas to further diversify its research capabilities. The Institute will support partner-wide collaboration through:

Oversight and leadership of the Director, who will drive the Institute's research objectives and foci with support from:

- **The Scientific Advisory Committee (SAC)** – faculty members, staff, the Donor (the Larry and Judy Tanenbaum Family Foundation) or their designate, and global leaders in the field to give programmatic direction to the Tanenbaum Institute. This committee will be composed of at least one member from each contributing division.

- **The External Advisory Committee (EAC)** – guidance and expertise from external stakeholders, the Donor or their designate, industry, athletes, government partners, and advocate groups.

Sport Data Modelling and Analytics: The Tanenbaum Institute will take full advantage of U of T's global leadership in the data and computational sciences by establishing an endowed Chair in Sport Science and Data Modelling, a Sports Data Modelling and Analytics Fund, and a data science stream for the Research Accelerator Fund. Located within the Faculty of Kinesiology & Physical Education, the Chair will be a globally renowned sport data scientist who will champion the collection, integration and analysis of sport science and sport medicine data across the Tanenbaum Institute and its partners to generate new, predictive insights into maintaining better athlete health and well-being. The Chair will receive vital support from a Sport Data Modelling and Analytics Fund, which will provide the necessary resources for data collection, storage and analysis, as well as a data science stream of the Research Accelerator Fund to support special projects and 'moonshot' data science initiatives.

With these resources in place, the Chair will work with data modellers and scientists across the partners and U of T to generate “big data”-driven athlete interventions, such as effective treatments and best practices to prevent injury, enhance rehabilitation and recovery, and maintain athlete health and safety. The Chair’s mandate will also lay the foundation for a unique GTA-wide platform among sport medicine clinics to register and retain key sport science and sport medicine data necessary to create a clinical referral system, pending future funding (see Future Potential p 18).

The Tanenbaum Institute Research Accelerator Fund (annual cycle process): To coordinate Institute research, calls for Research Accelerator Fund-worthy projects will be determined by a yearly cycle of meetings between the Director and the Scientific Advisory Committee, a semi-annual meeting of the Director with the External Advisory Committee, and one joint meeting with both committees to identify a primary topic of research. As part of the Tanenbaum Institute's Sport Modelling and Analytics program, a portion of this Fund will be specifically designated for projects related to data science research.

Competition for accelerator funding among trainees and researchers will support new ideas, promoting innovation and interdisciplinary research in sport science and sport medicine that requires investigators from a minimum of two of the partners. A review committee with representatives across the three partners will be struck to evaluate Research Accelerator Fund submissions for suitability Expendable, institutional matching against the Research Accelerator Fund will also provide support for trainee learning opportunities related to accelerator fund initiatives, a critical educational component of the Tanenbaum Institute's mandate.

Regular Research Rounds: Coordinated by the Director, quarterly research rounds and seminars with the Tanenbaum Institute researchers and trainees will be held virtually or in-person as circumstances permit. These rounds will enable principal investigators and trainees to exchange ideas around integral Institute themes and initiate new collaborations across the University of Toronto, Sinai Health, and the wider TAHSN network. The rounds will rotate between partners' locations or will be virtual to allow access from all locations.

Symposia/Conferences: The Institute symposia will be aligned on select Tanenbaum Institute-wide research themes and outcomes, and open to U of T and hospital partners. The annual Institute conference will welcome researchers, trainees, and all stakeholders across Canada, with potential roundtables featuring a diverse group of athletes, government, business and industry representatives, and medical and non-medical practitioners with strong ties to grassroots community groups and advocacy organizations. Conferences could include athlete ambassadors, panels, and breakout sessions to encourage peer learning and support for communities interested in areas of Institute research.

5. Translating Discovery into Impact

The Tanenbaum Institute for Science in Sport will stimulate bold, discovery-science research and practical applications in supporting athlete health. Guided by the principles of open science, the Institute will endeavour to share its insights, research, interventions, and innovations with sporting organizations, government and industry partners, and coaches, athletes, and the public, becoming a global hub for knowledge dissemination in sport science and sport medicine. This work will be underscored by a commitment to the principles of equity, diversity, and inclusion, with specific consideration of these matters in all of the Institute's governance and activities.

The Institute's goal is to translate research findings into practices and interventions that are open and accessible to all athletes and interested partners who wish to build on this work. This will be achieved in several ways:

Partnership with Maple Leaf Sports & Entertainment: The Tanenbaum Institute will leverage its location and connections across the GTA to connect with key stakeholders in the world of high-performance sport. One of the most prominent stakeholders is Maple Leaf Sport and Entertainment (MLSE). MLSE has been an international leader in the application of sport science to supporting the athletes, staff, and management of their teams, including player development. The Tanenbaum Institute can partner productively with MLSE in several ways. MLSE's athletes, staff, and coaches could provide an important voice in developing effective and relevant research proposals, including via potential participation in the External Advisory Committee and the Scientific Advisory Committee. The TFC Academy, for example, could provide a rich platform for longitudinal research that would inform decision making about the player trajectory through the Academy's developmental stages.

The Tanenbaum Institute's knowledge mobilization and community outreach activities could also include presenting current and on-going findings to MLSE management, sport science staff and others, as well as close participation in the annual conference and symposia, providing an opportunity for critical knowledge-sharing and professional development between academics and sport professionals.

Clinical Trials/New Interventions: With oversight from the University of Toronto Health Sciences Research Ethics Board, the Tanenbaum Institute will leverage the seasoned leadership of the Dovigi Orthopaedic Sport Medicine Clinic, UTOSM, and the TAHSN hospitals to conduct athletic clinical trials based on the Institute's leading-edge research. This work will be groundbreaking and wide-ranging, such as improving athlete body imaging technology to identify common sports injuries, analyzing patient data sets with AI and machine learning techniques, and discovering new markers associated with impaired performance. Clinical trials and intervention testing will be conducted in partnership with conditioning coaches at U of T, Maple Leaf Sports & Entertainment, provincial and national teams, and others.

Adherence to Open Science Principles: The Tanenbaum Institute for Science in Sport is committed to making sure that its research findings are transparent and accessible, with knowledge freely shared through collaborative networks and the public to support the Institute's core mission of making sports science accessible to all. As is standard practice, all projects funded by the Institute's funds will be required to register their planned trials and trial data with appropriate open science sources such as clinicaltrials.gov.

Industry Partnerships, Commercialization Patents, and New Technologies: A crucial measure of success for the Tanenbaum Institute will be the generation of industry partnerships and IP, the filing of patents, the licensing of technologies, and Canadian startup creation. This work will be supported in several ways across the Institute, including through the Director and the Directorate's Fund, the Chair and Fund in Sport Science and Data Modelling, the Research Accelerator Fund, the Institute's annual conference, and individual partners via seed grants and programming funds. These efforts may lead to a more formal trainee-focused entrepreneurial program as the Tanenbaum Institute evolves.

Online Presence and External Communications: Supported by the Director and the Directorate Fund, the Tanenbaum Institute will maintain a robust online presence with a website and social media presence, and may eventually include podcasts and special virtual events. As circumstances permit over the course of its first five years, the Institute will also host events, workshops, conferences,

and an annual Innovation in Sport Science Showcase Day targeted towards industry to highlight theInstitute's research, trainees, innovations, and IP. These efforts will further facilitate the development of industry partnerships, licensing, and funding opportunities.

Government, Community and Practitioner Engagement: The Tanenbaum Institute will leverage relationships with senior staff at academic units across the University of Toronto, including inviting their perspectives at research rounds and seminars or asking them to serve on the Scientific Advisory Committee. We will also build on our many existing relationships with government agencies, professional and amateur sporting bodies and credentialing organizations, physical therapists, and sports medicine practitioners to further the Institute's research goals across Ontario, Canada and further afield.

6. Tanenbaum Institute Sustainability & Operational Budget

The University of Toronto has a proven track record of sustaining and growing philanthropic seed investments across a range of diverse initiatives in the form of matching support and external grants. Established centres such as the Ted Rogers Centre for Heart Research and the Schwartz Reisman Institute for Technology and Society continue to multiply their initial foundational gifts. Likewise, U of T and Sinai Health will leverage Larry and Judy Tanenbaum's generous gift in several ways to ensure sustainability in its first five years and beyond. This includes multiplying the investment through a range of external grant opportunities, generating additional philanthropic engagement as the Institute becomes a global centre of excellence, and providing the following areas of support:

INSTITUTIONAL MATCHING

The University of Toronto and Sinai Health are pleased to offer more than $21,500,000 in fully expendable matching funds against Larry and Judy Tanenbaum's generous $20-million investment in the Tanenbaum Institute for Science in Sport (see budget for details). This includes:

- A match on the endowment income (creating an endowment equivalent match in perpetuity) to support salary and benefits for the Director and the Chair in Sport Science and Data Modelling from the University of Toronto
- $500,000 per year for five years in support of operations and research from U of T's Institutional Strategic Initiatives (ISI) program
- Matching support in the form of salary and benefits for the new Tanenbaum Professorship in Orthopaedic Sports Medicine at Temerty Medicine
- Matching support for the CIRCUIT and YAHIP programs at Temerty Medicine in the form of salary support for personnel and in-kind support for database infrastructure. This platform support includes both hardware and IT as well as licensing and maintenance costs
- Matching support from Sinai Health in the form of core research facilities and infrastructure for the new Tanenbaum Chair in Musculoskeletal Regenerative Medicine
- Matching support for administrative offices and laboratory space at the Faculty of Kinesiology & Physical Education

OTHER AREAS OF SUPPORT

- The Tanenbaum Institute will further leverage the existing physical, organizational, and administrative infrastructure and resources of the Faculty of Kinesiology & Physical Education, Temerty Faculty of Medicine, and Sinai Health in clinical care and sport science research. The Tanenbaum Institute will also take immediate advantage of the leadership and expertise of our faculty members. A list of experts who could play a role in the Tanenbaum Institute appears on page 19.
- The Tanenbaum Institute will be embedded in the heart of the Greater Toronto Area and open to Canada's most diverse patient population, which includes U of T's more than 900 varsity athletes across 44 teams. Our patient access also extends to the Toronto Academic Health Science Network and the many sporting bodies and sport medicine practitioners based in the GTA.
- Supported by the leadership of the Director and the External Advisory Committee, as well as the partner funds and the central Sport Data Modelling and Analytics Fund and Research Accelerator Fund, the Tanenbaum Institute will also multiply Larry and Judy Tanenbaum's generous gift through Government of Canada grant opportunities and external funding awards from organizations such as Sport Canada, Own the Podium, the Canadian Olympic and Paralympic Sport Institute Network, the Canadian Paralympic Committee, the Aboriginal Sport Network, and others. The Tanenbaum Institute will also benefit from new industry partnerships and sponsorships including with MLSE, the generation of exclusive IP, the filing of patents, the licensing of technologies, and the seeding of startups.

BUDGET

The operational budget below quantifies in-kind and fund matching and will allocate the Donor's gift to both endowed ($9M) and expendable ($11M) funds. The endowed / expendable ratio has been carefully considered with a view to stimulating and attracting the interest and engagement of excellent scientists and scientific teams from within U of T and Sinai Health. The expendable funds are critical for the recruitment of excellent scientists and clinician scientists into the proposed endowed chairs and demonstrate a magnitude of operating funds that will be immediately available to support their sport science and clinical research trials. The magnitude of the expendable funds will make an immediate impact on the generation of new knowledge and will raise the profile of the Institute internationally.

TANENBAUM INSTITUTE FOR SCIENCE IN SPORT — PROPOSED GIFT ALLOCATION SCHEDULE

FUNDS	INVESTMENT			DONOR PLEDGE SCHEDULE				
	Donor Investment	Institutional Matching Funds (Expendable)	Total Investment	Year 1	Year 2	Year 3	Year 4	Year 5
DIRECTORATE								
Institute Director								
Endowed	$3,000,000	$3,000,000[1]	$6,000,000	$150,000	$150,000	$150,000	$150,000	$150,000
Directorate's Fund								
Expendable (spent over 10 years)	$1,000,000	$1,250,000[2]	$2,250,000	$200,000	$200,000	$200,000	$200,000	$200,000
Subtotal Directorate	**$4,000,000**	**$4,250,000**	**$8,250,000**	**$350,000**	**$350,000**	**$350,000**	**$350,000**	**$350,000**
SPORT MEDICINE EDUCATION AND CLINICAL RESEARCH (TEMERTY FACULTY OF MEDICINE)								
Tanenbaum Professorship in Orthopaedic Sports Medicine								
Expendable (spent over 10 years)	$1,000,000	$1,000,000[3]	$2,000,000	$200,000	$200,000	$200,000	$200,000	$200,000
Programming (CIRCUIT and YAHIP Programs)								
Expendable (spent over 5 years)	$2,000,000	$5,950,000[4]	$7,950,000	$400,000	$400,000	$400,000	$400,000	$400,000
Subtotal Temerty Medicine	**$3,000,000**	**$6,950,000**	**$9,950,000**	**$600,000**	**$600,000**	**$600,000**	**$600,000**	**$600,000**
SPORT MEDICINE CLINICAL CARE (SINAI HEALTH)								
Chair in Musculoskeletal Regenerative Medicine								
Endowed	$3,000,000	$3,000,000[5]	$6,000,000	$150,000	$150,000	$150,000	$150,000	$150,000
Subtotal Sinai Health	**$3,000,000**	**$3,000,000**	**$6,000,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$150,000**
SPORT SCIENCE RESEARCH (FACULTY OF KINESIOLOGY AND PHYSICAL EDUCATION)								
Seed Grants								
Expendable (spent over 5 years)	$900,000		$900,000	$100,000	$200,000	$200,000	$200,000	$200,000
Research Trainee Support								
Expendable (spent over 5 years)	$1,225,000		$1,225,000	$245,000	$245,000	$245,000	$245,000	$245,000
Experimental Facilities and Scientific Equipment								
Expendable (spent over 5 years)	$875,000		$875,000	$300,000	$175,000	$150,000	$150,000	$100,000
Chair in Sport Science and Data Modelling								
Endowed	$3,000,000	$3,000,000[1]	$6,000,000	$150,000	$150,000	$150,000	$150,000	$150,000
Sport Data Modelling and Analytics Fund								
Expendable (spent over 5 years)	$1,000,000		$1,000,000	$200,000	$200,000	$200,000	$200,000	$200,000
Administrative Offices and Laboratory Space								
Annual cost for 3 administrative offices and a laboratory space (over 10 years)		$3,067,950	$3,067,950					
Subtotal KPE	**$7,000,000**	**$6,067,950**	**$13,067,950**	**$995,000**	**$970,000**	**$945,000**	**$945,000**	**$895,000**
RESEARCH ACCELERATOR FUND (AVAILABLE TO ALL PARTNERS)								
Research Accelerator Fund								
Expendable (spent over 5 years)	$2,000,000	$1,250,000[2]	$3,250,000	$400,000	$400,000	$400,000	$400,000	$400,000
Data and Analytics Stream - Expendable (spent over 5 years)	$1,000,000		$1,000,000	$200,000	$200,000	$200,000	$200,000	$200,000
Subtotal Research Accelerator Fund	**$3,000,000**	**$1,250,000**	**$4,250,000**	**$600,000**	**$600,000**	**$600,000**	**$600,000**	**$600,000**
TOTAL	**$20,000,000**	**$21,517,950**	**$41,517,950**	**$2,695,000**	**$2,670,000**	**$2,645,000**	**$2,645,000**	**$2,595,000**
Total Endowed	**$9,000,000**		**$9,000,000**	**$450,000**	**$450,000**	**$450,000**	**$450,000**	**$450,000**
Total Expendable	**$11,000,000**	**$21,517,950**	**$32,517,950**	**$2,245,000**	**$2,220,000**	**$2,195,000**	**$2,195,000**	**$2,145,000**

NOTES

1. The Faculty of Kinesiology & Physical Education will provide an expendable 1:1 annual match equivalent to the payout of the endowment to top-up the salary and benefits of the Director and the Chair in Sport Science and Data Modelling

2. The University of Toronto's Institutional Strategic Initiatives Office will provide annual expendable funding of $500,000 per year for 5 years, split between the Directorate's Fund and the Research Accelerator Fund

3. The Temerty Faculty of Medicine will provide expendable, support of $100,000 per year for 10 years to top-up the salary and benefits of the Professorship

4. The Temerty Faculty of Medicine will provide expendable support of $95,000 per year for 10 years for personnel plus $5 million in-kind for database infrastructure. This is platform support and includes both hardware and IT support as well as licensing and maintenance costs

5. Mount Sinai Health will provide an expendable 1:1 annual match equivalent to the payout of the endowment representing $150,000 per year to support core research facilities and infrastructure for the Chair

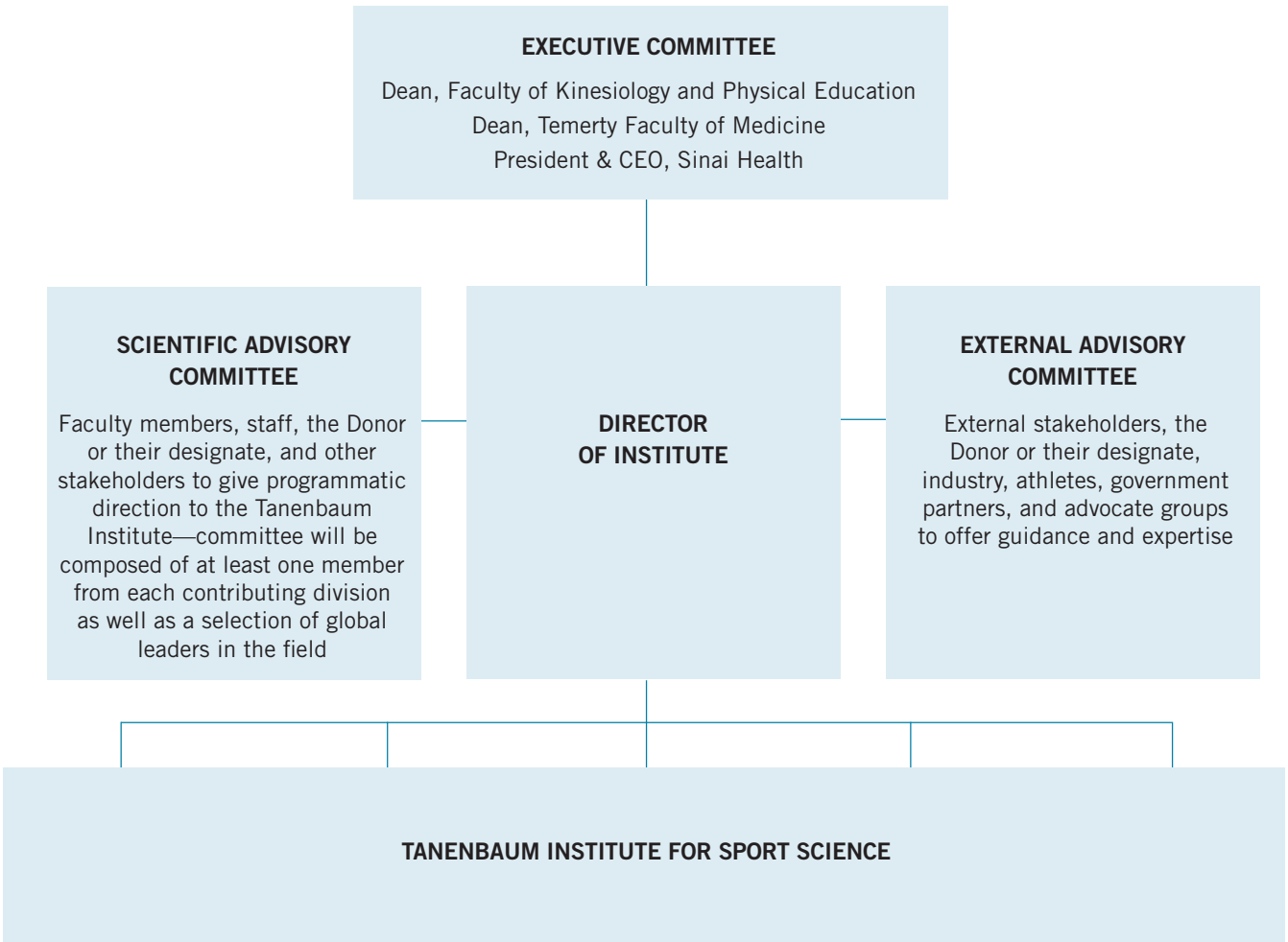
7. The Five-Year Plan

This section lays out the timeline for the Tanenbaum Institute's first five years of operations, with an accompanying Implementation chart. This plan aligns with similar, successful multidisciplinary centres and institutional strategic initiatives across the University of Toronto (see Appendix for full timeline chart).

FINALIZATION OF GIFT AGREEMENT & INSTITUTE LAUNCH

The Tanenbaum Institute's formal operations will begin immediately upon the signing of the gift agreement, with a formal media announcement of the gift on all University of Toronto channels and either a virtual or in-person event as circumstances allow.

GOVERNANCE & REPORTING



GOVERNANCE & REPORTING - continued

The Institute's Executive Committee will be composed of leaders representing Temerty Medicine, Sinai Health, and the Faculty of Kinesiology and Physical Education at U of T. This committee, in partnership with the Interim Director, will undertake the recruitment of the Scientific and External Advisory Committees to support the work of the Director and the Institute partners.

The Scientific Advisory Committee will consist of a cross-institutional panel of experts in sport science and sport medicine including faculty and staff from at least one of each participating division, the Donor or their designate, and global leaders in the field. The External Advisory Committee will consist of the Donor or their designate, industry, athletes, government partners, and advocate groups. Meetings for both groups will be held quarterly in year 1, with semi-annual meetings after that.

The Institute will also initiate a formal application process to become an extra-departmental unit (EDU), which will provide specific University-mandated guidelines for oversight. The Executive Leadership Committee will meet annually to convene on the Institute's progress toward realizing its core mission and vision. The Tanenbaum Institute will also submit an impact report to the Donor annually beginning at the end of year one.

INSTITUTE DIRECTORATE & DIRECTOR'S FUND

The appointment of the Interim Director will be followed by the launch of the Director's Fund. The Director will be provided administrative space and support at the Faculty of Kinesiology and Physical Education. The international search, recruitment, and appointment of the permanent Director position will be aligned with University of Toronto policies and guidelines and should conclude within one calendar year. The endowed Institute Director fund will be used to support the hiring of a faculty member scientist in the Faculty of Kinesiology and Physical Education, resulting in a net increase in the number of scientists or clinical scientists whose research includes a focus aligned with the mission and vision for the Institute.

The Interim Director will oversee the creation of a communications plan that includes a robust online presence with a site and social media channels. They will also work with the External Advisory Committee to develop a framework for developing community partnerships that contribute to Institute sustainability. This includes seeking new Tri-Agency grant opportunities and external funding awards, and, eventually, identifying opportunities to generate new IP, filing patents, and licensing technologies, and supporting unique, sport science startups. Finally, the Interim Director will organize an annual conference and symposia on topics aligned with the Institute's multidisciplinary research themes, providing another venue for public partnerships and collaboration.

CHAIR IN SPORT SCIENCE AND DATA MODELLING

The Chair in Sport Science and Data Modelling will champion the collection, integration, and analysis of sport science and sport medicine data across the Tanenbaum Institute. Supported by a Sport Data Modelling and Analytics Fund and the Research Accelerator Fund, the Chair's work will drive "big data" approaches to help generate new, predictive insights based on the Institute's research and clinical data into a range of areas related to athlete health, well-being and performance.

The Institute will commence striking a committee to recruit a globally renowned expert in data science and its application in sport science in Q3 year 1 to be completed in Q4, with the goal of announcing a new chair by Q3 of year 2.

RESEARCH ACCELERATOR FUND

The cross-Institute Research Accelerator Fund, including the Data and Analytics stream, will be a critical tool in developing the Tanenbaum Institute's research themes. Specific calls for proposals will be generated through a meetings cycle that includes the Director and the External and Scientific Advisory Committees. The Tanenbaum Institute will initiate a competition for seed funding of grants in Q1 to support innovative new ideas and new avenues of interdisciplinary research, with a stream dedicated specifically toward projects related to sport data modelling and analytics.

The Director, in consultation with the Scientific Advisory Committee and the partners, will strike a review committee to help identify appropriate projects for funding. This timing of grants will be adjusted with annual cycle of admissions to academic programs and training fellowships/scholarships. The Director will seek semi-annual reports on accelerator grant recipient projects beginning at the end of year 1.

INSTITUTE PARTNERS

Upon the Tanenbaum Institute launch, Sinai Health will strike a search committee to recruit and hire a leading expert in regenerative health to fill the Tanenbaum Chair in Musculoskeletal Regenerative Medicine. The search will commence halfway through year one, with an aim to fill the position no later than midway through year two. The endowed Regenerative Medicine fund will be used to support the hiring of a clinical scientist, resulting in a net increase in the number of clinical scientists whose research includes a focus aligned with the mission and vision for the Institute.

Temerty Medicine will also immediately recruit and fill the Tanenbaum Professorship in Orthopaedic Sports Medicine, aiming to fill it by Q1, year one. Temerty Medicine through UTOSM will also launch the Cartilage Innovation and Restoration Centre at the University of Toronto (CIRCUIT) program and the Young Adult Hip Innovation Program (YAHIP) by the end of Q2, year one, including recruiting a research coordinator and research assistant and establishing the infrastructure for data collection for the CIRCUIT program.

The Faculty of Kinesiology & Physical Education (KPE) will begin by preparing a communications and promotion strategy, identifying presenters for Institute rounds (which will continue every quarter), and soliciting applications to the Institute from graduate students and postdoctoral fellows with scholarships awarded at the start of Q3. By the start of Q2, KPE will issue a call for internal seed grant proposals, which will be reviewed and awarded midway through Q3. KPE will also issue a call for research equipment/facilities grant proposals and award them in Q3. Finally, KPE will launch internal sport science seminars for coaches and student athletes by Q3 and Q4 respectively. This cycle will repeat annually.

8. Tanenbaum Institute for Science in Sport – Future Potential

Larry and Judy Tanenbaum's generous $20-million investment to establish the Tanenbaum Institute for Science in Sport creates a strong foundation to expand on the Institute's reach and mandate, which would be made possible through additional philanthropic support. This may include some of the following elements, which represent aspirational ideals and will depend on the scale of further investment and the evolution of the goals and mandate of the Institute.

CLINICAL SPORT MEDICINE NETWORK

Building on the Sport Science and Data Modelling Chair and supporting funding, the Tanenbaum Institute will aim to include a GTA-wide, virtual sport medicine network of sport medicine clinics, beginning with stationing advanced practitioner physiotherapists at Toronto Academic Health Science Network hospitals and extending the network to community hospitals and participating private facilities. This could include creating the infrastructure and resources for the careful acquisition, storage and analysis of large, anonymized clinical patient data sets related to sports medicine, as well as a virtual care and referral service for athletes.

The GTA-wide sport medicine clinic database would allow for effective epidemiological studies related to sports medicine, acute sports injuries, concussions, rehabilitation, sport nutrition, sports psychology, and other areas related to primary care sport medicine, leading to new treatments and innovations in high performance athlete health care. The network would allow for the creation of a virtual referral service for sports-related issues, accessible through smart phone app, to help reduce the time between referral and treatment and ensure athletes receive the best level of care at the most appropriate location as quickly as possible. Users would also be given the option to take part in future Institute studies, creating an invaluable pool of research participants.

NEW CHAIRS & PROFESSORSHIPS

Establishing new chairs and professorships as part of a Tanenbaum Institute will be critical to attracting international talent and enhancing athlete health and well-being, particularly in cross-disciplinary and emerging areas of sport science and sport medicine. These new Institute-wide roles, drawn from a diverse pool of candidates, will significantly extend the Tanenbaum Institute's scope of research global leadership in fields such as physical therapy, family medicine, regenerative medicine, sport psychology and more, leading to cutting-edge work and innovative treatments.

FELLOWSHIPS, SCHOLARSHIPS, TRAINEE PROGRAMS & EXPERIENTIAL LEARNING

Equally important to fulfilling the Tanenbaum Institute's mandate is the ability to recruit and retain some of the most promising sport science and sports medicine scholars through fellowship programs and robust student awards for undergraduate, graduate, and postdoctoral candidates. Further investment in the Tanenbaum Institute will also provide for greater experiential learning opportunities, critical to expanding collaborative partnerships and hands-on training alongside community and industry partners, including Maple Leaf Sports & Entertainment. Finally, expanding trainee networks to include highly integrated programs including seminar series, workshops, and taught courses will further integrate the Tanenbaum Institute and attract talent from across the University and beyond.

These additional educational supports would allow the Tanenbaum Institute to pursue a more ambitious scope of research both across the University and beyond in some of the most cutting-edge areas of the field, and ensure the Tanenbaum Institute becomes one of the world's leading sources of sport science and sport medicine leadership in the coming decades.

TANENBAUM INSTITUTE SPORT SCIENCE ENTREPRENEURSHIP PROGRAM

Future investment in the Tanenbaum Institute could also provide a specialized experiential training program in partnership with veteran entrepreneurs and consultants across a variety of sectors related to sport science and sport medicine. This program would provide researchers, postdoctoral fellows, clinical trainees and graduate students entrepreneurship training, mentorship, networking, and funding opportunities to develop intellectual property and commercialize marketable innovations in athlete care based on the Tanenbaum Institute's research, taking advantage of U of T's entrepreneurial ecosystem to seed dynamic startups to revolutionize athlete care.

9. Accountability

To ensure accountability once the Tanenbaum Institute is in place, we offer the following reporting touchpoints:

- Annual scientific progress reports from the Director in consultation with partners, including details on the Chair and Fund in Sport Science and Data Modelling and the Research Accelerator Fund's projects. The report will focus on each of the critical areas of the Institute's research, from data analysis to knowledge translation to novel interventions and technologies, with individual stories illustrating impact
- Opportunity for the Donor and their representatives to meet annually, on request, with members of the Executive Committee
- Detailed annual financial reports with updates on additional funding from direct investment, grants, in-kind contributions, and other sources
- Regular checkpoints throughout the Tanenbaum Institute's first five years to follow progress on milestones and results, ensure that resources are allocated effectively, and discuss how the Institute's mission and vision are progressing—including making any necessary course corrections or adjustments to the long-term plan
- An opportunity for an annual meeting with the Institute Director, Executive Committee, and leading scientists to discuss Institute progress, accomplishments, and more.

10. Conclusion

The University of Toronto and Sinai Health and our athlete communities would like to express our shared gratitude to the Larry and Judy Tanenbaum Family Foundation for your generous investment in the Tanenbaum Institute for Science in Sport, as well as your time and effort in reviewing this implementation plan. We look forward to working with you to achieve the Institute's vision: To become the world's leading high-performance sport medicine and sport science centre of excellence.

APPENDIX 1: Tanenbaum Institute for Science in Sport — Implementation Timeline

TASK	YEAR 1												YEAR 2												YEAR 3												YEAR 4												YEAR 5											
	Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Finalization of Gift Agreement and Launch																																																											
Sign agreement	x																																																									
First pledge payment received and distributed to partners according to gift allocation budget	x																																																									
Gift announcement and formal launch of Centre			x																																																							
Governance and Reporting																																																											
Recruit members of the External Advisory Committee (EAC)			x																																																								
Recruit members of the Scientific Advisory Committee (SAC)			x																																																								
Regular meetings of EAC (quarterly year 1, semi-annually subsequent years)			x			x			x			x			x						x					x								x												x											
Regular meetings of SAC (quarterly year 1, semi-annually subsequent years)			x			x			x			x			x						x					x								x												x											
Apply for EDU status		x	x	x	x	x																																																				
Executive Committee Annual Meeting							x												x												x												x											
Donor											x											x												x												x										
3-Year Milestone Review with Donor																																			x																						
5-Year External Review																																																										
Institute Director/Directorate's Fund																																																										
Recruit and appoint Interim Director	x																																																								
Conduct international search for permanent Director	x	x	x	x	x	x	x	x	x	x	x	x																																													
Announce permanent Director													x																																													
Create Communications Plan		x	x	x																																																						
Develop framework for establishing community and industry partnerships in consultation with EAC			x	x	x																																																					
Host Annual Sport Science Conference											x											x												x												x										
Research Accelerator Fund																																																									
Identify research themes in consultation with SAC			x		x										x												x												x																
Launch Research Accelerator Fund with call for grant applications (annually) including Data and Analytics Stream			x												x												x												x																
Assemble Review Committee to assess applications and award grants					x	x	x	x									x	x	x	x								x	x	x	x								x			x	x	x	x										
Distribute funding							x												x											x												x													
Collect reports on funded projects											x											x												x												x										
Toronto Orthopaedic Sports Medicine Program (Temerty Medicine)																																																										
Recruit and hire Professorship in Orthopaedics in accordance with University policies	x	x	x																																																							
Launch Cartilage Innovation and Restoration Centre at the University of Toronto (CIRCUIT) program	x	x	x	x	x	x																																																				
Hire part-time Research Coordinator for CIRCUIT			x																																																						
Hire full-time Research Assistant for CIRCUIT							x																																																			
Setup infrastructure for data collection for CIRCUIT				x																																																					
Launch Young Adult Hip Innovation Program (YA-HIP)	x	x	x	x	x	x																																																				
Chair in Musculoskeletal Regenerative Medicine (Sinai Health)																																																										
Assemble committee to recruit and hire leading clinician in Regenerative Medicine			x	x	x																																																					
Issue call for applications							x																																																				
Hire and announce successful candidate																		x																																								
Chair in Sport Science and Data Modelling (Faculty of Kinesiology and Physical Education)																																																										
Assemble committee to recruit and hire leading expert in sport data modelling and analytics							x	x	x																																																	
Issue call for applications										x																																																
Hire and announce successful candidate																			x																																							
Research Initiatives and Trainee Support (Faculty of Kinesiology and Physical Education)																																																										
Prepare KPE communications and promotion strategy		x	x	x									x												x												x																			
Call for internal seed grant proposals				x												x												x												x																
Call for applications from graduate students, undergraduate student research assistants, and PDFs		x												x											x												x																			
Call for research equipment/facilities grant proposals						x												x												x												x													
Internal KPE sport science seminars for coaches								x																																																		
Internal KPE sport science seminars for student athletes										x											x														x																						
Seed grant proposals reviewed and awarded								x	x										x	x										x	x												x	x											
Graduate student scholarships and PDF's awarded							x												x											x												x													
Research equipment/facilities grants awarded									x												x												x												x										
Identify presenters for Centre rounds		x			x				x				x				x				x						x						x						x						x										

APPENDIX 2
Potential Researcher Pool

The combined expertise available through the Faculty of Kinesiology & Physical Education, Temerty Medicine, and Sinai Health provides an overview of the wealth and variety of expertise available to support the Tanenbaum Institute's work and research. Please note: the list does not include all the potential sources of scientific and clinical expertise that will become engaged in the Institute due to the magnitude of experts available to the partners.

FACULTY OF KINESIOLOGY & PHYSICAL EDUCATION

Dr. Robert Bentley
Title: Assistant Professor, Cardiovascular Physiology
Area of Focus: Cardio-respiratory physiology and performance

Dr. Timothy Burkhart
Title: Assistant Professor, Orthopaedic Biomechanics
Area of Focus: Biomechanics

Dr. Timothy Chan
Title: Professor, Mechanical and Industrial Engineering
Area of Focus: Sports Analytics

Dr. David Frost
Title: Assistant Professor, Teaching Stream, Sport and Exercise Biomechanics
Area of Focus: Biomechanics

Dr. Jenna Gillen
Title: Assistant Professor, Exercise Physiology
Area of Focus: Training, Performance, Nutritional Interventions

Dr. Jack Goodman
Title: Professor, Cardiac Health and Exercise
Area of Focus: Cardio-respiratory Physiology and Performance; the Athlete Heart

Dr. Michael Hutchison
Title: Professor, Illness and Suffering
Area of Focus: Sports Concussions

Dr. Ira Jacobs
Title: Professor, Exercise Physiology
Area of Focus: Training, Performance, Nutritional Interventions

Dr. Gretchen Kerr
Title: Dean and Professor, Sport Psychology
Area of Focus: Athlete/Coach Relations

Dr. David Lawrence
Title: Assistant Professor and Director, MacIntosh Sport Medicine Clinic
Area of Focus: Sport Medicine; Sport Concussions

Dr. Marius Locke
Title: Associate Professor, Muscle Damage
Area of Focus: Applied Physiology and Muscle Metabolism

Dr. Daniel Moore
Title: Assistant Professor, Muscle Physiology
Area of Focus: Protein Metabolism and Performance

Dr. Doug Richards
Title: Associate Professor, Sport Medicine
Area of Focus: Sport Medicine; Sport Concussions

Dr. Catherine Sabiston
Title: Professor, Canada Research Chair in Physical Activity and Mental Health
Area of Focus: Sports Psychology/Mental Health and Physical Activity

U of T Faculty of Kinesiology & Physical Education - continued

Dr. Timur Taha
Title: Associate Professor, Teaching Stream, Elite Athlete Training
Area of Focus: Sports Analytics

Dr. Katherine Tamminen
Title: Associate Professor, Sport Psychology
Area of Focus: Sports Psychology

Dr. Scott Thomas
Title: Professor, Exercise for Health and Performance
Area of Focus: Cardio-respiratory physiology and performance

Dr. Luc Tremblay
Title: Associate Professor and Associate Dean of Research, Sensorimotor Control
Area of Focus: Motor Learning and Sports

Dr. Tim Welsh
Professor, Cognitive and Neural Motor Behaviour
Area of Focus: Motor Learning and Sports

TEMERTY FACULTY OF MEDICINE

Dr. Jihad Abouali
Title: Assistant Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine
Area of Focus:
Pediatric ACL Reconstruction, Pain Relief After Knee Arthroscopy

Dr. Jaskarndip Chahal
Title: Assistant Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine
Area of Focus:
Osteoarthritis after ACL Reconstruction, Cartilage Restoration, Functional Bracing, Femoral Acetabular Impingement of the Hip

Dr. Kim Coros
Title: Clinician Teacher, Physical Medicine & Rehabilitation Physician
Area of Focus: Neurologic Rehabilitation

Dr. Tim Dwyer
Title: Assistant Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine
Area of Focus: Orthopaedic and Sports Medicine Education, ACL Surgery, Team Coverage, Anterior Cruciate Ligament Reconstruction, Rotator Cuff Tears

Dr. Darrell Ogilvie-Harris
Title: Professor, Surgery, Program Director (UTOSM), Orthopaedic Sports Medicine
Area of Focus: Knee Anterior Cruciate Ligament Reconstruction, Chondromalacia, Arthroscopic Knee Surgery

Dr. Patrick Henry
Title: Assistant Professor, Orthopaedic Surgery, Shoulder Arthroscopy
Area of Focus: Proximal Humeral Fractures, Rotator Cuff Tears, Shoulder Arthroscopy, Arthroplasty, Trauma, Surgery

Dr. David Lawrence
Title: Medical Director, Staff Physician, MacIntosh Sport Medicine Clinic
Area of Focus:
Sport-Related Concussion, Traumatic Brain Injury, Injury Prevention
Sports Sociology

Dr. Timothy Leroux
Title: Assistant Professor, Orthopaedic Surgery
Area of Focus: Pain Control After Sport Medicine Surgery, Glenoid Bone Grafting in Total Shoulder Arthroplasty, Tendon Transfer, Massive Rotator Cuff Tears, Failed Arthroscopic Bankert Repair

Temerty Faculty of Medicine at U of T - continued

Dr. Paul Marks
Title: Associate Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine, Shoulder and Knee
Area of Focus: Sports Medicine, Arthroscopy, Reconstruction of the Shoulder And Knee, Imaging, Biomechanics, Ultrastructural Morphology, Cruciate And Meniscofemoral Ligaments

Dr. Aaron Nauth
Title: Assistant Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine, Trauma and Upper Extremity
Area of Focus:
ACL, Hip Arthroscopy, Upper Extremity, Trauma

Dr. Sam Park
Title: Assistant Professor, Surgery
Area of Focus: Foot and Ankle Surgery, Total Ankle Arthroplasty, Trauma Surgery

Dr. Ryan Paul
Title: Assistant Professor, Orthopaedic Surgery, Hand and Wrist Surgeon
Area of Focus: Rotator Cuff Tears

Dr. Sev Perelman
Title: Associate Professor, Emergency Medicine
Area of Focus: Pain Management, Anaesthesia

Dr. Ujash Sheth
Title: Assistant Professor, Upper Extremity Reconstruction and Trauma Surgery
Area of Focus: Total Shoulder Arthroplasty, Pain Relief After Sport Medicine Procedures, Concussion, Femoroacetabular Impingement

Dr. John Theodoropoulos
Title: Assistant Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine
Area of Focus: ACL Injury, Hockey Injuries, Rotator Cuff Injury

Dr. Christian Veillette
Title: Associate Professor, Orthopaedic Surgery, Shoulder and Elbow Reconstructive Surgery
Area of Focus: Information, Communications & Technology, Osteoarthritis Care

Dr. David Wasserstein
Title: Assistant Professor, Orthopaedic Surgery, Sports Medicine Specialist
Area of Focus: Epidemiology of Trauma Surgery, Orthopaedic Sports Medicine, Trauma Surgery and Fracture Care, Shoulder Instability

Dr. Danny Whelan
Title: Associate Professor, Orthopaedic Surgery, Arthroscopy and Sports Medicine
Area of Focus: Trauma, Orthopaedic Multi-Ligament Knee Injuries, Hip Arthroscopy

SINAI HEALTH

Dr. Aksa Ahmed
Title: Research Coordinator for the University of Toronto's Lumbar Spinal Stenosis Study at Mount Sinai Hospital
Area of Focus: Chiropractic care

Kyla Alsbury
Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Physiotherapy

Dr. Carlo Ammedollia
Title: Assistant Professor, Institute for Health Policy & Evaluation and the Department of Surgery, Faculty of Medicine
Area of Focus: Mechanical, Degenerative and Inflammatory Spinal Disorders

Jennifer Beasley
Title: Registered massage therapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Massage Therapy

Sinai Health - continued

Donna Bielawski
Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Physiotherapy

Adriana Biernat
Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Physiotherapy

Dr. Davor Cepo
Title: Consultant, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Chiropractic care

Adam Chen
Title: Traditional Chinese Medicine (TCM) Practioner, Acupuncturist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: TCM and Acupuncture

Annette Broderick Colombo
Title: Registered massage therapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Massage Therapy

Glenn H. Copeland
Title: Podiatrist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Podiatry

Desmond Fung
Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Physiotherapy

Lydia Giammartino
Title: Registered massage therapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Massage Therapy

Dr. Melissa Givelos
Title: Functional Integrative Therapy provider, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Chiropractic Care

Melanie Gordon
Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Physiotherapy

Elysa Graci
Title: Certified Athletic Therapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Athletic Therapy

Fanny Ip
Title: Traditional Chinese Medicine (TCM) Practioner, Acupuncturist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: TCM and Acupuncture

Dr. Fahim Merali
Title: Sports Medicine Physician
Area of Focus: Acute/Chronic Musculoskeletal Conditions

Brendan Mooney
Title: Certified Athletic Therapist, registered massage therapist, strength and conditioning coach
Area of Focus: Athletic therapy

Marni Pepper
Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic (Vaughan site)
Area of Focus: Physiotherapy

Priyanshi Randeria
Title: Registered Massage Therapist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Massage Therapy

Elizabeth Roberts
Title: Speech Language Pathologist, Dovigi Orthopaedic Sports Medicine Clinic
Area of Focus: Speech Language Pathology

Sinai Health - continued

Shabdit Shah

Title: Adjunct Lecturer, University of Toronto Department of Physical Therapy, Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic

Area of Focus: Physiotherapy

Daniel Snider

Title: Certified Athletic Therapist, Dovigi Orthopaedic Sports Medicine Clinic

Area of Focus: Athletic Therapy

Larissa Tutert

Title: Physiotherapist, Dovigi Orthopaedic Sports Medicine Clinic

Area of Focus: Physiotherapy

Dr. Lawrence White

Title: Professor, Division Head, Musculoskeletal Imaging

Area of Focus: Musculoskeletal Radiology, Magnetic Resonance, Imaging Cartilage, Imaging, Sports Medicine

APPENDIX 3
Overview of Global Sport Science & Sports Medicine Centres

The following is a list of highly respected global centres[1] for sport science and sport medicine and potential models for the Tanenbaum Institute's work. The Tanenbaum Institute for Science in Sport will study and learn from the experiences of these centres, and complement them with its unique academic sport science framework, its location in Toronto's Health Science cluster situated in Canada's single-payer health-care system, U of T and Sinai Health's infrastructure, human resources, diverse and expansive athlete populations, and extensive governmental, organizational, and industry partnerships.

SCHOOL OF SPORT, EXERCISE AND HEALTH SCIENCES – LOUGHBOROUGH UNIVERSITY (UK)

The School of Sport, Exercise and Health Sciences at Loughborough combines world-class training facilities, comprehensive undergraduate and postgraduate educational programs, and leading research and industry partnerships in sport science and sport medicine. The School is an internationally recognized centre of excellence for the study of sport, exercise, and health through the natural and social sciences, located in the East Midlands outside of Leicester.

The University does not have a medical school but has recently partnered with hospitals associated with the University of Leicester and the University of Nottingham to become one of three new UK hubs (the others are in London and Sheffield) that comprise the UK National Centre for Sport and Exercise Medicine. Loughborough University's academic program in sport-related disciplines is perennially ranked number one in the world by the QS World University Rankings by discipline. The University campus is also home to several national sport team training centres and leverages the presence of the athletes and coaches for research and sport medicine clinical care.

SYLVAN ADAMS SPORTS INSTITUTE – UNIVERSITY OF TEL AVIV (ISRAEL)

The Sylvan Adams Sports Institute was established in 2018 at University of Tel Aviv to research endurance sports, such as swimming, running, cycling, and triathlon. The integration of the Institute within the Tel Aviv University campus allows it to provide the ideal environment for testing and training, combined with a research facility, all to improve athletic performance. The Centre's researchers are few and their primary appointments are in other divisions of the University of Tel Aviv that include their Faculty of Engineering and Faculty of Medicine.

The Institute is relatively new with few faculty members. Its commitment to sport science and sport medicine is tied to a very significant financial gift that has provided

[1] It is important to recognize the challenges in comparing or ranking sport medicine / sport science centres globally. Any selection of key performance indicators for such comparisons is confounded by the wide variations in organizational structure (e.g. academic, public, private) and the related funding sources.

them with excellent research infrastructure and the potential power of an excellent academic institution in the University of Tel Aviv. There is currently no academic division at the University that focuses on kinesiology, sport, or exercise science.

EXERCISE AND SPORT SCIENCES – THE UNIVERSITY OF QUEENSLAND (AUSTRALIA)

The Exercise and Sport Sciences program brings together leading academics, alumni, and industry partners with a mission to improve the nation's health and well-being through exercise and sports science, nutrition, physical activity and health, sport, and physical education. Students in the Exercise and Sport Sciences program receive over 400 hours of practical training with external industry placements and also on-campus in specialized exercise clinics. The program includes a diverse range of research areas from biomechanics to nutrition and exercise physiology and local community partnerships. The University's academic program in sport-related disciplines is ranked among the top 10 in the world by the QS World University Rankings by discipline. The program just launched a Master of Sports Medicine degree, which is a one-year program for current general practitioners who are working in the field. The university does not have a sports medicine clinic but does have a physiotherapy and rehabilitation clinic for students recovering from musculoskeletal injuries. The Brisbane Orthopedic Sports Medicine Clinic is private and has research and clinical training collaborations with the university.

WITS CENTRE FOR EXERCISE SCIENCE AND SPORTS MEDICINE -- THE UNIVERSITY OF THE WITSWATERSRAND (SOUTH AFRICA)

The Wits Centre for Exercise Science and Sports Medicine addresses academic development, research, and service delivery concerning sport science. The Centre was established in October 2004, and in 2008 it was accredited as Africa's first FIFA Medical Centre of Excellence. It is also accredited as a FIMS (International Sports Medicine Federation) Collaborating Centre of Sports Medicine. The Wits Centre research areas include sports injuries, injury prevention, drugs in sport, sport performance, and wellness. The Centre has a small number of staff and only one sports medicine physician listed on its roster, although it does provide sports medicine clinical care.

YONSEI INSTITUTE OF SPORTS SCIENCES AND EXERCISE MEDICINE – YONSEI UNIVERSITY (SOUTH KOREA)

The Yonsei Institute of Sports Science and Exercise Medicine (YISSEM) actively engages in research and education to prevent athlete injury and promote public health. It is the first and only IOC research centre to prevent injury and protect athlete health in Asia. The Institute also houses the Integrated Sports Science Research Laboratory (ISSRL), established in 2012 to integrate four different studies: biomechanics, sports medicine, neuromuscular science, and sports psychology.

JAMES R. URBANIAK, MD, SPORTS SCIENCES INSTITUTE — DUKE UNIVERSITY (USA)

The James R. Urbaniak Sports Sciences Institute integrates research, education, and clinical care to the benefit of all athletes. It is primarily focused on clinical care and supporting sport science research at Duke. Clinical services include surgical treatments related to orthopaedics, primary care sports medicine, sports ophthalmology, sports cardiology, women's sports medicine, and sports neurology and concussion treatment. It is noteworthy that Duke University does not have an academic department or degree program in the discipline of kinesiology.

THE WU TSAI HUMAN PERFORMANCE ALLIANCE – VARIOUS UNIVERSITIES (USA)

The Wu Tsai Human Performance Alliance is a public-private partnership of thought leaders and innovators from six research institutions, made possible by a foundational gift from Clara Wu Tsai and her husband, Joe Tsai, in 2021. Alliance researchers will harness advances in medicine, brain science, molecular biology, engineering, and more to explore physical prowess from every imaginable scientific angle – including the biochemistry, physics, psychology, and biomechanics of movement to improve human health broadly.

INSTITUT NATIONAL DU SPORT DU QUÉBEC

Created in 1997, the Institut national du sport du Québec (INS Québec) is a private, not-for-profit organization that supports all athletes involved in Olympic or Paralympic sports and high-performance coaches in Québec. INS Québec offers cutting-edge solutions powered by experts and partners with the common goal of enabling athletes training in Québec to improve and excel on the international stage. INS Québec and its network support more than 550 high-level athletes—comprising mainly Canadian teams—and nearly 2,000 next-generation athletes and some 900 coaches supervising them.

CANADIAN OLYMPIC & PARALYMPIC SPORT INSTITUTE NETWORK

The Canadian Olympic and Paralympic Sport Institute Network (COPSPIN) provides training environments to elite athletes and coaches across Canada. Its team of experts delivers sport science and medicine, coaching, research and innovation, education, and Game Plan services with a mission to help Canadian athletes win more medals. The Canadian Olympic and Paralympic Sport Institute Network includes four Canadian Sport Institutes (Pacific, Calgary, Ontario, and Québec) and three Canadian Sport Centres (Saskatchewan, Manitoba, and Atlantic). Although circumstances vary from centre to centre, the research is usually very applied because of the nature of the funding structure of the centres and the focus on the short term. Most of the funding comes from sport governing bodies that are the centres' clients and/or other provincial or federal sport funding bodies. The clinical care capacities within these organizations are typically defined by partnership or contracted agreements with individual clinicians or arms-length sport medicine clinics.

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