

From consensus to action: knowledge transfer, education and influencing policy on sports concussion

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ABSTRACT

Objective To: (1) provide a review of knowledge transfer (KT) and related concepts; (2) look at the impact of traditional and emerging KT strategies on concussion knowledge and education; (3) discuss the value and impact of KT to organisations and concussion-related decision making and (4) make recommendations for the future of concussion education.

Design Qualitative literature review of KT and concussion education literature.

Intervention PubMed, Medline and Sport Discus databases were reviewed and an internet search was conducted. The literature search was restricted to articles published in the English language, but not restricted to any particular years. Altogether, 67 journal articles, 21 websites, 1 book and 1 report were reviewed.

Results The value of KT as part of concussion education is increasingly becoming recognised. Target audiences benefit from specific learning strategies. Concussion tools exist, but their effectiveness and impact require further evaluation. The media is valuable in drawing attention to concussion, but efforts need to ensure that the public is aware of the right information. Social media as a concussion education tool is becoming more prominent. Implementation of KT models is one approach which organisations can use to assess knowledge gaps; identify, develop and evaluate education strategies and use the outcomes to facilitate decision-making.

Conclusions Implementing KT strategies requires a defined plan. Identifying the needs, learning styles and preferred learning strategies of target audiences, coupled with evaluation, should be a piece of the overall concussion education puzzle to have an impact on enhancing knowledge and awareness.

INTRODUCTION

Knowledge transfer (KT) has made recent advances in the scientific literature and is becoming an important topic in sports medicine.¹ The 2008 Concussion in Sport Consensus Statement draws attention to KT² and highlights its importance in communicating information about enhancing awareness of and optimising education regarding concussion.²⁻³ Participation in sport plays a role in the lives of many athletes, parents, coaches and sport governing bodies. As the struggle of dealing and coping with the effects of concussion by popular sport personalities is drawn into the public eye, the impact of concussion, the importance of recognising signs and symptoms, receiving proper management/treatment and the value of education

becomes even more urgent. Research studies examining the understanding and knowledge base of sport concussion among athletes and parents, coaches and trainers, physiotherapists and medical personnel/students have found that there is limited, incomplete or a lack of standardised knowledge,⁴⁻²² reinforcing the need to optimise and provide knowledge. Specialised educational tools have been implemented to target concussion knowledge areas such as signs and symptoms, prevention, recognition and response for populations such as student-athletes and coaches.²³⁻²⁷ Implementation of these tools has facilitated changes in concussion knowledge, attitudes and practices, supporting the need for optimal and specialised educational efforts.

Expanding concussion knowledge and providing education goes beyond traditional methods of face-to-face and printed materials.²⁸⁻²⁹ The use of websites and social media, which provide concussion information and advice, should be considered.²⁹⁻³⁰ Those interacting with concussed and healthy individuals need to: assess the information needs of the target audience and their preferred method of learning; implement KT principles when developing or identifying optimal education strategies and determine the success of these strategies.

This review paper is based on a literature search and will: (1) provide a brief overview of KT and related concepts; (2) review traditional (eg, printed materials) and emerging KT strategies (eg, legislation and social media) and look at the impact on concussion knowledge and education; (3) discuss the value of KT to organisations, the role of KT frameworks and the impact on concussion-related decision making and (4) where possible, make recommendations for the future of concussion education.

METHODS

Databases Pubmed, Medline and Sport Discus and an internet search were used in this literature review. The search was conducted using standardised terms, both alone and in combination with each other, such as 'knowledge', 'knowledge transfer', 'concussion', 'education', 'optimal learning', 'media' and 'social media'. Databases were explored by looking at KT as part of concussion research, as well as KT research in general. The literature search was restricted to articles published in the English language, but not restricted to any particular years. Altogether, 67 journal articles, 21 websites, 1 book and 1 report were reviewed.

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RESULTS

KT 101—a review of KT and related concepts

KT and exchange is a critical ingredient for optimising education, and in this case, specifically concussion education.^{3 31 32} KT or translation (used synonymously in this paper) is ‘the exchange, synthesis and ethically-sound application of knowledge within a complex system of interactions among researchers and users to accelerate the capture of the benefits of research... through improved health, more effective services and products, and strengthened healthcare system.’^{33 34} The definition of KT or translation has evolved, and several organisations have developed their own definitions.^{34–36}

KT encompasses steps ranging from knowledge creation to application, which involves the effective exchange between researchers that create and use knowledge.³⁴ The Canadian Institutes for Health Research³⁷ and Sudsawad’s report *Knowledge Translation: Introduction to Models, Strategies and Measures*³⁴ identified integral components of KT. The components involve considering various KT characteristics and continuing dialogues, interactions and partnerships within and between different groups of knowledge creators and users. As we reflect on how to influence concussion knowledge, education and policy and consider the role of the media, organisations and the social media, KT characteristics should be considered³⁴ (table 1).

Various interactive groups³⁴ also have a role in enhancing concussion awareness and education, and are listed in table 2.

The evolution of KT strategies and their value to concussion

Optimal learning strategies vary and should be accounted for as part of the development of effective concussion KT strategies.^{3 40} In Provvienza and Johnston’s discussion paper ‘Knowledge transfer principles as applied to sport concussion’, optimal education strategies for physicians, coaches, physiotherapists, athletic trainers and therapists and the student-athlete were discussed, and are summarised in table 3. The table outlines the distinct learning differences and needs of these target audiences, which for the purpose of this paper has been expanded to include suggestions for optimal concussion learning strategies.³ It is important to note that learning strategies are optimised not only by considering the learning needs of target audiences, but also by the type of content and quality of information disseminated.

In addition to those audiences listed in table 3, direction has been taken to address concussion education for nurses, medical students and nursing students to enhance their awareness of concussion (Dr Charles Tator, personal communication).

A multitude of concussion education resources exist. Multimedia approaches have been established to deliver concussion knowledge to a wide variety of target audiences. Provvienza and Johnston³ also outlined the role of the internet, television and video games as learning resources (table 4), which has been expanded to include the value of the media and social media and an application to sport concussion.

Provvienza and Johnston’s review describes the importance of using education strategies that are appropriate for a specific target audience to optimise concussion education. This work helped to drive future education efforts, such as the evaluation of a concussion education and support group consisting of an education presentation, case studies, peer interaction/discussion and a concussion workbook, as an optimal KT strategy for athletes and their parents.⁶⁷

As concussion information evolves, how we learn about concussion does so as well. Concussion is a term that has become part of the common ‘media dictionary’ used by sportscasters, as concussive injuries of prominent sport figures are becoming frequent. The value of media highlighting concussion is that it draws attention to the seriousness of this issue to all stakeholders. The value of the media as an education strategy needs to be considered in alignment with the communicated content and the attitudes of those commenting on such a unique and serious issue. McLellan and McKinlay explored the impact of how concussion is portrayed in a rugby league on public awareness of appropriate concussion management. Most injured players were shown to continue playing or return to play while concussed, and were described as such by the sports commentary team. The authors suggest that although the athletes’ return to play was medically managed, how concussion management is portrayed via sport broadcast is different, and may influence the public’s understanding of concussion and how they manage their own injuries.⁷⁵

Outside of video gaming, television and the media, the worldwide web and social media networks, such as Facebook and Twitter, are becoming more prominent. The internet plays an important role in disseminating health information, as several websites have emerged offering injury management, prevention and concussion information and advice.^{29 30 50} The overall quality of these websites, however, has not been well researched.^{29 76} Ahmed, *et al* evaluated the information quality, content and readability of a range of selected concussion/sports concussion-based websites. These websites were evaluated using: (1) HONcode—an instrument for evaluating health information on the internet; (2) CONcheck—a custom designed concussion information checklist and (3) a readability assessment to determine the capacity of the websites to deliver information at a level understood by the reader. The websites’ information quality varied, with many missing key facts associated with concussion management and the content was delivered at a reading level that may not be easily understood by the target audience.²⁹

Social media as a KT tool is gaining momentum. It involves using internet services where users of the service generate online content.⁷⁷ Social media as a KT strategy involves communities emerging around content, having organised networks and reciprocity (mutual giving and taking, correspondence, etc between two parties) among those involved in the networks.⁷⁷ Social Networking Sites, such as Facebook and Twitter, have been examined as a vehicle for communicating sport science

Table 1 Characteristics of knowledge transfer³⁴

<ul style="list-style-type: none"> ▶ Includes all steps between the creation of new knowledge and its application ▶ Needs multidirectional communications ▶ Is an interactive process ▶ Requires ongoing collaborations among relevant parties ▶ Includes multiple activities ▶ Is a non-linear process 	<ul style="list-style-type: none"> ▶ Emphasises the use of research-generated knowledge (that may be used in conjunction with other types of knowledge) ▶ Involves diverse knowledge-user groups ▶ User-specific and context-specific ▶ Impact-oriented ▶ Interdisciplinary process
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Table 2 Interactive groups involved in KT and their role in concussion education and awareness

Interactive groups ³⁴	Concussion-related groups
<ul style="list-style-type: none"> ▶ Researchers within and across research disciplines ▶ Policymakers, planners and managers throughout the healthcare, public health, and health public policy systems 	<ul style="list-style-type: none"> ▶ Scientists conducting concussion research ▶ Education Amendment Act (Concussions; Bill 39 in Ontario), 2012 regarding policies and guidelines in respect of head injuries and concussions³⁸ ▶ Implementation of concussion laws in 40 states in the USA³⁹ ▶ Implementation of rules by National Sporting Organizations to reduce concussion and injury risk (eg, no pushing or checking from behind in Ice Hockey)
<ul style="list-style-type: none"> ▶ Healthcare providers in formal and informal systems of care 	<ul style="list-style-type: none"> ▶ Nurses and physicians providing current concussion information in their medical offices to patients
<ul style="list-style-type: none"> ▶ General public, patient groups and those who help to shape their views and/or represent their interests, including the media, educators, non-governmental organisations and voluntary sectors 	<ul style="list-style-type: none"> ▶ Healthy and concussed athletes, parents, coaches, trainers and teachers gathering information about concussion and educating those around them ▶ Peer support groups on Facebook⁴⁰ or Twitter³¹ ▶ Organisations dedicated to concussion awareness (eg, ThinkFirst Canada, Centre for Disease Control (CDC), Hockey Canada, etc)
<ul style="list-style-type: none"> ▶ The private sector, including venture capital firms, manufacturers and distributors 	<ul style="list-style-type: none"> ▶ Helmet manufacturers, computerised concussion assessment tests/programmes, concussion balance assessments

KT, knowledge transfer.

research and concussion information. Facebook involves members communicating either privately or publicly through posting messages, links and photographs.^{32 40} Members can join 'fan pages' that promote a variety of issues, and may be associated with businesses and advocacy groups.^{32 40} Williams examined the use of Facebook to communicate soccer-specific sport science research.³² A Facebook fan page and a soccer research website (Science of Soccer Online—SSO; <http://www.scienceofsocceronline.com>), which translate soccer research into practical applications for coaches and athletes, were established. The Facebook fan page was created as a means to facilitate communication with the SSO users. The fan page also accounted for the largest number of referrals to the SSO website, and users noticed and utilised the SSO link. The results of the study support the use of Facebook as a means of communicating soccer research.

Through the use of content analysis methodology, Ahmed, *et al*⁴⁰ analysed and classified information on concussion-specific Facebook discussion groups. Facebook users adopted Facebook as a support tool to relate personal experiences regarding their brain injuries. The authors highlighted that although high-quality concussion information may be communicated using traditional methods, the information may not be widely accessed or accessible to the target audience. Using Facebook discussion groups moderated by healthcare professionals or concussion-based organisations may be an effective way to provide proper concussion advice so that it is easily accessible and widely utilised.

Twitter is growing rapidly as a means to communicate information. It allows users to post brief messages or 'tweets' online regarding a variety of different topics, including health.³¹ Sullivan, *et al*³¹ analysed the online content of concussion-related tweets to determine the concept and context of concussion as it relates to an online population. This study demonstrated the value of Twitter as a KT strategy for broadcasting and disseminating general concussion information. The value of evaluating online concussion information to avoid misconceptions and misunderstandings was also emphasised by the authors.

Role of KT in organisations and impact on outcomes and policies

Making knowledge part of organisational processes and outputs, distributing and disseminating information in easily accessible forms, and facilitating learning are challenges faced by

organisations.⁷⁸ KT has become a strategic focus of organisations and is vital to their functioning; KT is important to an organisation's competitive advantage and success.^{79–83} Sharing knowledge helps organisations to reduce costs⁸⁴ and enables its members to identify, respond and adapt quickly to environmental situations.⁸⁵ Knowledge sharing allows organisational members to see the bigger picture and make well-informed decisions.⁸⁶ Individual members are responsible for learning and transferring knowledge; if individuals transfer knowledge to others, then the organisation has learned.^{84 87} From a manager's perspective, learning and implementing best practices are important. This process can involve assessing the organisations' capabilities to determine what knowledge is needed for success and what knowledge can be shared or traded with partners/alliances.⁸¹ Knowledge is acquired from different sources including competitors, customers, suppliers, channel partners and other organisations.⁸⁸

Managers need to assess which sources have the knowledge that is most useful to them and the organisation. Darr and Kurtzberg⁸⁸ examined the conditions under which partner similarity enhances KT and found strategic similarity to be an important dimension. Similarities among organisations can have a positive effect on the motivation and ability needed for one organisation to learn from another.⁸⁸ Taking this knowledge and applying it to improving concussion education awareness makes sense. Injury prevention organisations, for example, should come together to create a widespread approach to enhance concussion education and awareness for their own organisation members and their target audiences. This is a difficult job to do; when there are similar issues at the forefront of multiple organisations with common goals, working together to transfer concussion knowledge is essential. When there is a united front in place, education for various target audiences may be provided and evaluated effectively and efficiently. This approach can also be applied towards the implementation of concussion related rule changes and policies. Inconsistencies, discrepancies and inaccuracies about concussion exist. Variable information can be found during a Google search or from a physician not trained in sport concussion. The existence of inaccurate information is an indication that organisations need to: (1) ensure that the right concussion knowledge is in place; (2) develop and evaluate awareness and education strategies in alignment with what has been reviewed here; (3) work with their partners and/or competitors to achieve the common goal of concussion education and awareness and (4) promote change.

Table 3 Summary of learning strategies with an application to sport concussion

Target audience	Learning strategy	General findings	Application to sport concussion
Physicians	<ul style="list-style-type: none"> ▶ Printed Education Materials ▶ Didactic Lectures ▶ Audit and Feedback ▶ Education Outreach ▶ Opinion Leaders ▶ Interactive Education Sessions ▶ Patient Mediated Interventions ▶ Reminders 	<ul style="list-style-type: none"> ▶ Ineffective standalone method for enhancing physician performance^{41 42} ▶ No/limited interaction with presenter; little impact on changing physician performance^{43 44} ▶ Variable effectiveness and moderate impact on physician practice^{41-43 45} ▶ Effective in influencing physician behaviour⁴¹ ▶ Further clarity regarding peer impact is needed⁴¹ ▶ Effective; allows participants to apply current knowledge⁴¹ ▶ Variable effectiveness⁴² ▶ Form of reinforcement found to be effective⁴¹ 	<ul style="list-style-type: none"> ▶ Printed materials as supplemental educational material for example: <ul style="list-style-type: none"> – CDC Heads Up Tool Kit for Physicians⁵⁰ – ThinkFirst Concussion Guidelines for Physicians⁵¹ ▶ Experts providing concussion education knowledge, for example: <ul style="list-style-type: none"> – ThinkFirst Concussion Road Show⁵² ▶ Providing concussion education webinars that provide knowledge, case studies and collegial/peer interaction ▶ Integrating concussion as part of medical school training/curriculum¹⁶
Physiotherapists (PT)	<ul style="list-style-type: none"> ▶ Problem Based Learning (PBL) ▶ Evidence Based Learning (EBL) ▶ Socialisation 	<ul style="list-style-type: none"> ▶ Conflicting research in medical field; difficulty in generalising model to PT education^{46 47} ▶ Positive attitude towards EBL; focusing on practical PT needs may be an approach to addressing EBL⁴⁸ ▶ Evolve in learning process; focus switches from practice elements towards evaluation and critique of practice application⁴⁹ ▶ Become self-directed learners; progress in what and how they're learning as changes occur in their experiences⁴⁹ 	<ul style="list-style-type: none"> ▶ Printed materials as supplemental education ▶ Providing concussion education webinars that provide knowledge, case studies, and collegial/peer interaction ▶ Online concussion courses⁵³
Athletic trainers and therapists	<ul style="list-style-type: none"> ▶ Peer Assisted Learning (PAL) 	<ul style="list-style-type: none"> ▶ Gain knowledge, understanding and skills from peer interaction and experiences⁵⁴ ▶ Peer feedback supplements clinical instructors' feedback⁵⁴ 	<ul style="list-style-type: none"> ▶ Printed materials as supplemental education for example: <ul style="list-style-type: none"> – Concussion Guidelines for the Coach/Trainer^{62 63} ▶ Providing concussion education webinars that provide knowledge, case studies, and collegial/peer interaction ▶ Online concussion courses^{53 64 65}
Coaches	<ul style="list-style-type: none"> ▶ Reflection ▶ Online Learning (Montana Model) 	<ul style="list-style-type: none"> ▶ Framework to connect education, theory and practice⁵⁵ ▶ Access to current, user and administrative friendly materials⁵⁶ ▶ The web-based coaching comprehensive curriculum⁵⁶ 	<ul style="list-style-type: none"> ▶ Printed materials as supplemental education for example: <ul style="list-style-type: none"> – Concussion Guidelines for the Coach/Trainer^{62 63} ▶ Resources providing concussion-specific case studies, how to address ethical issues and deal with the athlete, parent/caregiver ▶ Online concussion courses^{53 64 65}
Student-athlete	<ul style="list-style-type: none"> ▶ Multiple Intelligences ▶ Peer Support Groups 	<ul style="list-style-type: none"> ▶ Children have strengths and weaknesses in different areas, different intellectual profiles and require different use of intelligences⁵⁷ ▶ Students become self-directed, gain confidence, understand abilities of themselves and others, identify strengths and work on their weaknesses^{58 59} ▶ Educators learn to appreciate a wider variety of student strengths^{58 59} ▶ Criticised for being too broad for planning curriculum; inadequately supported by evidence⁶⁰ ▶ Reduces anxiety, depression, anger, confusion and frustration, enhances coping strategies, and improves mood⁶¹ 	<ul style="list-style-type: none"> ▶ Working with the patient-student-athlete to establish individualised return to school and play care plans⁶⁶ ▶ Online concussion courses^{53 65} ▶ Participation in a concussion education and support group that enhances knowledge, facilitates peer interaction and support⁶⁷

Table 4 Summary of learning resources with an application to sport concussion

Learning resource	General findings and sport concussion examples	Reference
Internet	<ul style="list-style-type: none"> ▶ More prominent in education and is recognised as having the ability to change performance, knowledge and skill acquisition ▶ Valuable supplement to traditional approaches to education, with the potential to improve learning quality, access to training and education, and enhance the cost-effectiveness of education: <ul style="list-style-type: none"> – Distance learning: learning at a distance; – Blended learning: combined electronic and face-to-face learning; and – Flexible learning: learner can choose either online or face-to-face learning ▶ Differences among learners, best practices, accessibility and experience with technology to facilitate on-line learning require further examination ▶ A variety of sport concussion-related websites exist, but there is variability in the standard of these websites. Sport medicine website providers should consider the delivery, content and readability of the information provided to the general public 	68,69,70 and 29
Television	<ul style="list-style-type: none"> ▶ Can act as a socialising agent and a learning tool ▶ Direct class teaching: substitutes for teachers on a temporary basis ▶ School broadcasting: compliments teaching and learning resources that are not available ▶ General educational programming: programming occurs over the community, national and international stations, providing general information education ▶ Linked to aggressive behaviour, violence, and childhood obesity ▶ Sport concussion educational programs have been produced by injury prevention organisations to address concussion issues at hand. An example is the 'Smart Hockey' program developed by ThinkFirst Canada, that discusses signs and symptoms and return to play 	71 and 72
Video Games	<ul style="list-style-type: none"> ▶ Linked to inactivity, asocial and violent behavior ▶ Can target specific, positive learning outcomes by: bridging gap between learned theory and practical application; and offering important attributes for positive learning (eg, motivation, mastering lessons through practice and repetition, goal setting and achievement, personalised learning and patience) ▶ Barriers include high development costs, negative attitudes of parents and educators and reluctance of educational settings to adopt electronic innovations 	73 and 74
Media	<ul style="list-style-type: none"> ▶ Draws public awareness to important issues and events ▶ Media portrayal of important issues, specifically concussion, may affect public awareness of proper concussion management 	75
Social media—facebook	<ul style="list-style-type: none"> ▶ Social Networking Sites (SNSs) have the potential to facilitate collaborations and share information through online communication ▶ Concussion Facebook sites, for example, are linked to advice seeking and social support ▶ The value of 'iSupport' is reflective of changing methods of communication in today's society, which could benefit from the moderation of healthcare professionals experienced in concussion to ensure proper information is communicated 	31 and 40
Social media—Twitter	<ul style="list-style-type: none"> ▶ Has the capacity to serve as a broadcast medium for a variety of topics including sport concussion information and education ▶ Evaluation of online information, specifically concussion, for integrity and accuracy is essential 	31

Although we know that KT provides organisations with a competitive advantage, it is important to consider how this information can be used to help those who need concussion knowledge.

Addressing knowledge gaps using KT models/frameworks

Gaps in concussion knowledge may be addressed by adopting and implementing KT models/frameworks. By using KT models, organisations can (1) accurately assess concussion knowledge gaps; (2) identify, develop and evaluate education strategies and (3) use

the outcomes to facilitate decision making. For the purpose of this paper, the Knowledge-to-Action (KTA) framework is being applied to sport concussion. It was chosen because of its comprehensiveness and incorporation of the full cycle of KT.³⁴

The KTA framework⁸⁹ involves knowledge creation and action; knowledge is research based and reinforces collaboration between the knowledge creators and users.^{34 89} Knowledge creation involves refining, distilling and tailoring to the needs of knowledge users (eg, healthcare professionals, policy makers and

Table 5 Definition of Knowledge-to-Action's knowledge creation steps and its application to a theoretical sport concussion coaching example

Knowledge creation steps ^{89 90}	Concussion coach resource application
Knowledge inquiry ▶ Constitutes the multitude of primary studies or information of variable quality addressing a particular question	▶ Conduct a literature search and gather all studies/information related to coaching concussion knowledge and understanding of concussion, effective coaching resources, and optimal coach-learning strategies
Knowledge synthesis ▶ Represents the aggregation of existing knowledge, a literature summary that uses explicit methods to perform a comprehensive literature search and critical appraisal of studies, and statistical techniques to combine these valid studies (eg, systematic reviews, meta-analyses)	▶ Conduct a systematic review, for example, to assess the most appropriate articles gathered in the knowledge inquiry phase
Knowledge tools/products ▶ Present knowledge in a clear, concise, and user-friendly format, providing recommendations to facilitate the uptake and application of knowledge	▶ Conduct a synopsis of what is found and make recommendations, for example create a web-based concussion curriculum

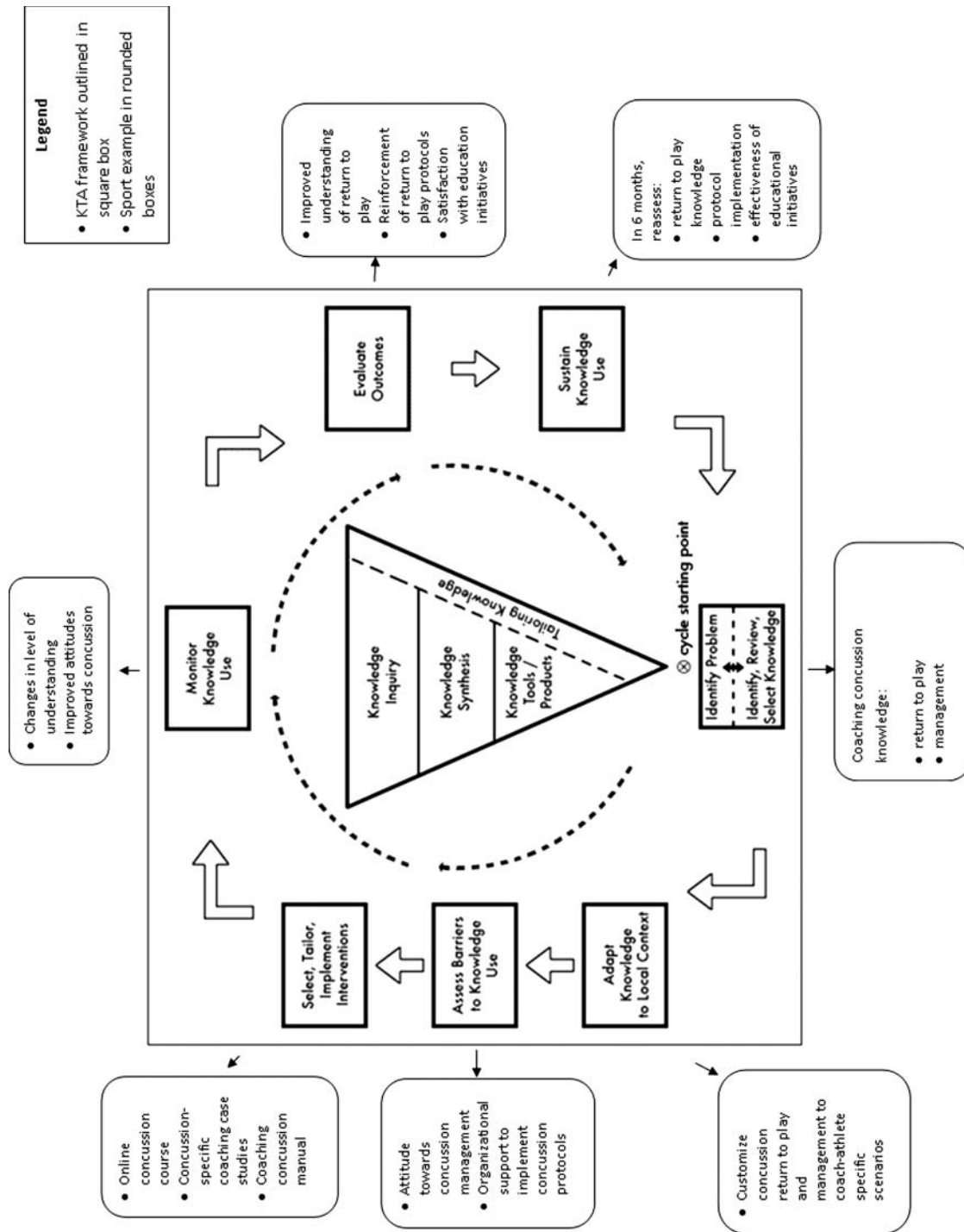


Figure 1 Application of the Knowledge-to-Action (KTA) framework^{89 90} to sport concussion example.

coaches). Knowledge creation involves knowledge inquiry, knowledge synthesis and knowledge tools/products.^{34 89 90} From the perspective of sport concussion, if a coaching association, for example, wanted to improve knowledge about returning to play management and developing appropriate coaching resources, the organisation would need to follow these initial steps. The knowledge creation steps and an application to a theoretical concussion-coaching example are outlined in table 5.

The action cycle involves applying knowledge to achieve a change in groups and consists of: (1) identifying the knowledge need of the relevant stakeholders; (2) adapting the knowledge for the context of use to facilitate acceptance and overcome challenges; (3) assessing barriers and facilitators related to the knowledge to be used, the potential users and the knowledge setting; (4) identify, tailor and implement interventions to facilitate, promote and implement the knowledge; (5) monitor knowledge use; (6) evaluate impact to determine if the knowledge use made a difference on desired outcomes for the stakeholders and (7) implement a plan to sustain knowledge over time and in changing environments.^{34 89 90} The original framework with an application to the theoretical coaching example originally provided is illustrated in figure 1.

SUMMARY AND RECOMMENDATIONS

The linkages between KT and concussion are becoming stronger. It is clear that (1) distinct target audiences benefit from specific individualised learning strategies and (2) several concussion KT tools exist.

Strategies are emerging, yet their effectiveness and overall impact require further insight and investigation. We are aware of the value and importance of face-to-face education and printed materials. The media is valuable in drawing attention to concussion, but efforts are needed to ensure that public awareness is being drawn to the right concussion information. Using Facebook and Twitter is an indication of how learning strategies are changing. These approaches need to be further scrutinised to ensure that the proper information is communicated, and that the value of Facebook as a social support tool or Twitter as a broad communication tool is improved upon and enhanced (eg, the role of a medical moderator in ensuring the accuracy and integrity of concussion information). The emergence of these strategies warrants investing time in enhancing peer support groups, workshops or supplemental printed materials to make them more attractive learning tools (eg, online interactive peer support group webinar) to appeal to the emerging generations that are becoming our physicians, coaches, athletic therapists, trainers, athletes, etc. As the relationship between KT and concussion evolves, how concussion is dealt with also changes. Implementation of the KTA framework or a KT model, in general, is just one way to help us achieve this, while making sure that all of the appropriate KT concepts are considered.

When it comes to optimising concussion knowledge and education, the process is important. Using Facebook, Twitter or the media to highlight the concussion angle and discuss relevant issues, or partnering with organisations to tackle this injury requires a plan. We must take deliberate steps to (1) heighten concussion knowledge, (2) create, identify, implement, evaluate and evolve optimal educational strategies and (3) use evidence-based knowledge to make the decisions, rules and policies that affect concussion health.

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