

Міністерство освіти і науки України
Комітет з фізичного виховання і спорту МОН України
Сумська обласна державна адміністрація
Управління молоді та спорту Сумської обласної державної адміністрації
Національний університет фізичного виховання і спорту України
Тартуський університет (Естонія)
Сумський державний університет



**ІННОВАЦІЙНІ ТЕХНОЛОГІЇ В СИСТЕМІ
ПІДВИЩЕННЯ КВАЛІФІКАЦІЇ ФАХІВЦІВ
ФІЗИЧНОГО ВИХОВАННЯ І СПОРТУ**

ТЕЗИ ДОПОВІДЕЙ
IV МІЖНАРОДНОЇ НАУКОВО-МЕТОДИЧНОЇ КОНФЕРЕНЦІЇ
(Україна, Суми, 13–14 квітня 2017 року)

Суми
Сумський державний університет
2017

COMPETITIVE ADVANTAGE OF INNOVATIVE TECHNOLOGY IN HIGH PERFORMANCE SPORT TRAINING CENTRES

Jonathan C. P., MBA stud.

University of Huddersfield UK, England

Mizz_angel_smile@hotmail.co.uk

Galenin R. Y., phd of Economics, Senior Lecturer

Sumy State University, Ukraine

Futbik78@mail.ru

Abstract. Sports technologies are part of the growing global sports and recreation industry. In the world of high performance sport, prominent sports stars and elite coaches are increasingly tapping into the world of technology and innovation to advance performance. Innovations in technology are applied across all areas of sports science, sports medicine, sports surgery, sports rehabilitation and sports coaching to enhance elite sport performance. In many ways, the emerging era of the ‘technology driven sport space’ is changing both the way that we practice and the way we connect with sport.

Keywords. Competitive advantages, innovations, sports, organization and performance

Main aim. “Innovation” is a source of competitive advantage to sport organizations. It is broadly defined as the introduction of a new idea or behavior in the form of a technology, product, service, structure, system or process on to the market. It is a different process to “invention” and involves the implementation and/or adaptation of new knowledge. Technology is only one form of innovation and refers to the mechanical arts or applied sciences collectively and their application. A recent discussion on research and innovation in Sumy revealed that major drivers of innovation include: 1. challenge (e.g. scarcity and threat) and 2. Facilitation (e.g. availability of funding, infrastructure to support innovation and a willingness to take risks). The removal of legal, administrative and sociological barriers to innovation is also regarded as a critical ‘facilitator’ of innovation

In the context of elite sport, innovation may be driven or ‘facilitated’ by the inadvertent knowledge sharing that is generated by collaboration and partnerships between athletes, coaches, scientists, commercial enterprises, institutes of sport and/or knowledge-driven institutions (e.g. universities). New ideas that are developed in collaborative spaces and supported by cultures of innovation can be transformed into technological applications that are tested in the market or ‘sport space’ to facilitate competitive advantage. Innovation can also stem from the ‘challenges’ posed by the intensity and rigor of competition in the international sport environment. Innovation may be required to address the needs of athletes, coaches and sport scientists to effectively plan, monitor and evaluate athlete performance using technology in the daily training and competition environment. Identifying and understanding drivers of innovation can provide a platform from which to explore technology opportunities and address performance gaps. Regardless of the source of an innovation, the innovation process traditionally follows a series of steps to either generate an innovation (such as a new product or process to resolve a problem) or adopt an innovation (carry out activities to further the use of an existing innovation). The stages of innovation are broadly categorized as:

1. Identifying knowledge or performance gaps (foreseeing or recognizing a problem).
2. Conducting research to develop knowledge bases.
3. Creating or adopting solutions for the problem.
4. Establishing and testing lines of enquiry.
5. Creating support for the solutions.

One of the most crucial steps in the innovation process is identifying and assessing needs through the eyes of athletes, coaches and expert support staff within high performance sport organizations. Being aware of a need or opportunity for change is considered to be a significant driving force of the innovation process and a precursor to the incorporation and success of an innovation^{1, 2, 5}.

Conducting a needs assessment involves deconstructing an identified need into its component parts to determine solution requirements. Based on this understanding, the needs assessment process ends before selecting or developing any technology intervention, yet provides the necessary data for developing solutions and delivering useful results⁴. Generating or adopting an innovation without conducting a needs assessment is a fundamental mistake, because determining the solution before identifying the performance problem (e.g. a gap in results at the individual level) is similar to attempting to improve performance before really being aware of what initially needs to be addressed. Therefore, needs assessment is a focused performance-improvement tool and can be considered a proactive planning activity. Proactive approaches to identify and assess need can lead to success in innovation.

In elite sport settings, new technology must meet the increasing demand for athlete services to provide a competitive advantage for sporting organizations. In order to sustain the highest levels of performance and excellence, the following four key strategies and recommendations for technology innovation are provided:

1. Conduct a needs assessment and needs analysis to provide a framework for innovation (e.g. Riot et al³). High performance sport training centers must effectively identify requirements at all levels of the support system. A technology needs assessment and analysis should therefore consider:

- the perspective of multiple stakeholders.
- perceived need in various performance and situational contexts to effectively develop new directions and manage risk.

Stakeholders can help identify need by considering the various contexts for technology innovation in elite sport. Seeking different perspectives and considering varying contexts can lead to the generation of creative ideas to address performance gaps.

2. Assess opportunities for development and/or adoption of new technologies on the basis of their cost, relative to their expected benefits and the availability of resources needed to ensure their effectiveness.

High performance training centers can avoid the issue of ‘a solution in search of a problem’, by identifying knowledge and performance gaps through a needs assessment. This process optimizes an organization’s resources and processes. Innovations also need to be appropriate for the unique context of the adopting organization to ensure effectiveness.

3. Collaborate and network with sport providers (e.g. coaches, high performance directors), technology firms and researchers to build an innovation culture and address opportunities.

In order for innovation to thrive, the broader environment in which it takes place must be encouraging and supportive. Organizations rarely innovate alone. Innovation is a highly interactive, multidisciplinary process which increasingly involves co-operation and partnerships between a growing and diverse network of organizations and individuals in elite sport settings.

The greater the number of intra-organizational networks, the greater the response to innovation adoption and innovation success. For example, linking knowledge obtained from elite athletes and sporting organizations with researchers and sports technology firms can, in entrepreneurial terms, increase the ‘value’ of technology innovation. Through these networks, organizations can exchange knowledge and resources needed to encourage innovation and promote the diffusion of new ideas.

4. Innovate and commercialize new sports technologies.

High performance sport training centers are part of an increasingly competitive sport space and the pace of competition is even faster where technology innovations are incorporated. Faced with more competitive organizational models, improved athlete services, better technologies and challenging performance strategies by competitors, building innovation capability becomes an important, if not vital, strategy for high performance sport training centers to find greater efficiencies in utilizing their resources.

The existing body of sports researchers, sporting organizations and active technology firms in Qatar provide an ideal starting point for successful development and commercialization of technology innovation. Qatar’s existing innovation ecosystem can be used to

facilitate closer collaboration amongst sport researchers and firms involved in commercializing new technologies applicable to sport.

Conclusion. So, how innovative are you? Innovation is a pathway to greater competitiveness. Supported by innovative thinkers, elite sport organizations can minimize barriers and maximize opportunities for commercialization of new ideas. This article has provided an overview of technology use in elite sport and a framework for technology innovation and innovative practice. When moving forward with innovation it is important to consider the individual needs of elite athletes, coaches and their expert support staff before generating or adopting an innovative solution.

Needs assessment is an important part of technology innovation. As a tool for policy and decision makers the proposed technology and innovation framework strengthens the ability of sport to innovate as necessary and strategically to achieve performance goals. The process of identifying and prioritizing needs can help to address gaps between current and desired results and provide a distinct competitive advantage. To conclude, technology innovation should be an enabler of performance in sport, rather than a goal in itself.

References

1. Hahn A. Guest Editorial // Sports Technology, 2011. – 4 : 108–110 pp.
2. Wilted A. J, Billing D. C., James D. A. Validation of trunk mounted inertial sensors for analyzing running biomechanics under field conditions, using synchronously collected foot contact data // Sports Engineering, 2010. – 12 : 207–212 pp.
3. Wilted A. J., Thiel D. V., Hahn A. G., Gore C. J., Pine D. B., James D. A. Measurement of energy expenditure in elite athletes using MEMS-based triaxial accelerometers // Sensors Journal : IEEE 2007. – 7 : 481–488 pp.
4. Damanpour F. Organizational size and innovation // Organization Studies, 1992. – 13 : 375–402 pp.
5. Zaltman G., Duncan R., Holbek J. Innovations and Organizations // John Wiley & Sons. – New York 1973.