The Cost of Reward: A Critical Reflection on the 'What', 'How', and 'Why' of Gamification for Motivation in Sports

Dees Postma
d.b.w.postma@utwente.nl
Human Media Interaction, University of Twente
Enschede, the Netherlands

Armağan Karahanoğlu
a.karahanoglu@utwente.nl
Interaction Design, University of Twente
Enschede, the Netherlands

Robby van Delden
r.w.vandelden@utwente.nl
Human Media Interaction, University of Twente
Enschede, the Netherlands

Dennis Reidsma
d.reidsma@utwente.nl
Human Media Interaction, University of Twente
Enschede, the Netherlands

ABSTRACT

Sports is greatly valued both for its internal benefits (e.g., joy and fulfilment) and its external benefits (e.g., physical health). Still, many people struggle to find or uphold the motivation to practice sports. To ameliorate this issue, researchers in the field of SportsHCI have been actively exploring various *gamification* strategies. In this contribution, we critically reflect on the 'what', 'how', and 'why' of gamification in sports. We argue against the use of gamification for 'quick wins', instead we argue that gamification can only be truly successful if it supports the spontaneous, self-sustained, and autotelic propensity in people to play sports.

CCS CONCEPTS

• **Human-centered computing → HCI theory, concepts and models**.

KEYWORDS

sports, motivation, gamification, Self-Determination Theory, physical literacy

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1 INTRODUCTION

Gamification plays an important role in many SportsHCI systems that aim to boost motivation in sports. Beyond the simple application of points, badges, and leaderboards (PBL), the principles of gamification have also been applied in more profound ways [6]. For example in supporting the basic human needs that underlie motivation [34], such as relatedness [e.g. 1, 8–10, 26, 27, 44, 45], competence [e.g. 13, 15, 23, 24, 33, 39, 41], and autonomy [e.g. 22, 31, 37, 42]. Indeed, the concept of gamification offers powerful tools to enrich the experience of sports. To capture our stance on gamification, we echo the words of Yu-Kai Chou: "*If the world adopts good gamification principles and focuses on what truly drives fun and motivation, then it is possible to see a day where there is no longer a divide between things people must do and the things they want to do.*" [6, 20] Here we critically reflect on what it means for designers of SportsHCI to adopt 'good gamification principles'. We will draw from Self-Determination Theory [34, 35, 38] and the concept of Physical Literacy [43] to illuminate the factors that 'truly drive fun and motivation' in sports [38].

2 MOTIVATION IN SPORTS

Self-Determination Theory (SDT) is a meta-theory on human motivation and personal growth. It considers the quality of motivation, as well as the factors that promote or thwart motivation [34]; making it a very suitable theory to reflect on the factors that 'truly drive fun and motivation' in sports [see also: 38]. SDT holds that the basic psychological needs for *competence*, *autonomy*, and *relatedness* should be fulfilled to facilitate intrinsic motivation and the internalisation of external motivation [34].

The concept of Physical Literacy holds clear parallels to SDT. Physical literacy is defined as "*the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities for life.*" [4] Put simply, physical literacy is the whole of activities that an individual can tap into to fulfil their innate desire to move.

Both the concept of physical literacy and Self-Determination Theory offer firm grounding for understanding the factors that drive motivation in sports. In the next section, we will investigate how various elements of these theories are currently represented in SportsHCI systems that rely on gamification. We will do this by reflecting on the 'what', 'how', and 'why' of gamification in sports.

3 THE 'WHAT' OF GAMIFICATION

Gamification in sports is often designed to address the *effects* of physical (in)activity not the *causes*. The focus is on energy expenditure, heart rate, step count, physical activity, sitting hours, etc. In such an approach, sports is considered a means to an end, not an end in itself [see also: 40]. This utilitarian perspective is pushing sports squarely in the realm of extrinsic motivation, where "*extrinsic motivation [is] represented by behaviours that are instrumental for some separable consequence such as an external reward*" [34, 35]. To promote long-term engagement with sports we must reject the

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utilitarian perspective and focus on the internal goods of sports [see also: 29]. Focusing on the factors that 'truly drive fun and motivation' [20] will promote the spontaneous, self-sustained, and autotelic propensity in people to play sports.

While the tendency to gamify the *effects* of sports persist in the latest work in the field, other works have also pursued the (more productive) route of supporting the underlying factors that promote motivation, self determination, and physical literacy. 'Competence' for instance, which is key to both SDT and physical literacy, has been designed for by the provisioning of augmented feedback [e.g. 33, 39, 41]; the creation of rich learning environments [e.g. 13, 17, 18, 32]; and the offering of optimal challenge [7] through (skill) balancing [e.g. 2, 3, 14, 16, 28]. Similarly, 'relatedness' [e.g. 1, 8–10, 26, 27, 44, 45] and 'autonomy' [e.g. 22, 31, 37, 42] have received widespread attention. We argue that gamifying the factors that underlie motivation, self determination, and physical literacy yields greater potential for long-term engagement in sports than gamifying the separable outcomes of sports [cf. 38, 43].

4 THE 'HOW' OF GAMIFICATION

Simple PBL-mechanics are still often used in SportsHCI to provide external motivation for people to play sports. The use of such external drivers is problematic for three interrelated reasons.

First, simple external rewards only target a narrow group of people. Organismic Integration Theory, a constituent theory of SDT, posits that *extrinsic* and *intrinsic* motivation span a continuum of regulation styles, ranging from those that are externally controlled (extrinsic motivation) to those that are personally valued and self-endorsed (intrinsic motivation) [12]. Simple PBL-mechanics mostly cater to the 'extrinsic' end of the spectrum, providing external rewards to keep people engaged with the activity. As such, only those people that act in the presence of external constraints, rewards, and/or punishments are targeted. People who act out of introjected regulation, identified regulation, or integrated regulation [34] are less well supported, even though all of these people still act out of *extrinsic* motives.

Second, providing external rewards to people who are intrinsically motivated may undermine their engagement with the activity, lessening their involvement [11, 34]. "*[F]actors considered by the actor to be controlling (e.g., rewards) ... have been shown to undermine a person's level of intrinsic motivation*" [38]. Simple PBL-mechanics make use of such external rewards that may negatively impact intrinsically motivated people in their propensity to practice sports.

Third, the long-term effects of external rewards on sports participation are little promising. Research shows that people with an external or introjected regulation style show low levels of long-term engagement with the target activity: "*acting out of introjected regulation does not to lead to long-term persistence in a behavior; that is, introjects are fragile as the individual does not feel ownership*" [38]. Furthermore, controlling types of extrinsic motivation have been associated with "*maladaptive consequences, such as athlete burnout, low levels of dispositional flow, sport dropout, reported aggression, and an acceptance of cheating*" [38]. At best, the long-term effects of gamification are understudied. Nacke and colleagues, in a special issue on gamification, contended that "*we are still dearly lacking studies with rigorous designs that assess both psychological mediators and behavioural outcomes and do so long-term and in the wild, not just short-term and in the lab.*" [30] Finally, it is not clear how simple PBL-based systems support the process of internalisation; supporting people to move from an external regulation style towards an integrated or even intrinsic regulation style.

Designers of SportsHCI should shy away from using gamification mechanics that offer simple external rewards. Instead, more profound tactics should be employed that fit a broader range of regulation styles (i.e., introjected, identified, integrated, and intrinsic). Inspiration for the design of such systems can be drawn from established frameworks that already combine elements of SDT, physical literacy, and other human needs with the power of gamification [e.g. 6, 25, 29].

5 THE 'WHY' OF GAMIFICATION

The principles of gamification are often applied to make sports more lively, fun, and engaging. The fundamental premise that underlies this rationale is that sports are not lively, fun, and engaging *enough*. We reject this premise. While some may indeed experience sports to be boring [5, 19], monotonous [21, 47], dull [46], or otherwise unfulfilling, it is *their experience* with sports that needs our attention, not the sport itself. We need to adopt a different attitude towards gamification in sports. We should stop treating sports like we treat paying taxes (cf. [36]). Sports can be an inherently fulfilling activity that, with the right designs, can be experienced as such by the masses.

Finally, gamification is often applied to maximise the utility of sports in terms of its separable consequences. Treating sports as a means to an end will ultimately prove to be an ineffective way to promote long-term engagement with sports [43]. Instead, "*programmes or interventions that concentrate on achieving mastery, developing intrinsic motivation without the need for external recognition (such as rewards) and without the discouraging feelings of being under pressure when performing in the company of peers or significant others are likely to encourage children to engage in long-term physical activity*" [43]. Only when treating sports as an inherently fulfilling activity will all the benefits that we are now striving for follow naturally.

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