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ENHANCEMENT AND CONVERGENT TECHNOLOGIES: RESPONSIBILITY IN ADAPTED SPORTS? (THE *SUPERCRIP* HEROES OF POSTMODERNITY)

ENHANCEMENT E TECNOLOGIE CONVERGENTI: RESPONSABILITÀ NEGLI SPORT ADATTATI? (I *SUPERCRIP* EROI DELLA POSTMODERNITÀ)

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Abstract

Biopotentiation is many things; in every known era there have been people actively engaged in improving their bodies, both by learning and perfecting certain attitudes with training, and by researching techniques and procedures to obtain better results in particular activities. A problematic case is that of athletes - particularly the Paralympics - who want to increase their skills to obtain better results; essentially there are three ways to do this: get better equipment, train by refining techniques and / or with effective fitness machinery, by biopotentionig (drugand technological doping, gene therapy, etc.). All these means (devices, training, bio-enhancement), by retroacting on our cognitive apparatus and on our body, explicitly give us the possibility to change ourselves through their use. In Paralympic sports where the best athletes are defined *supercrip*, we find a strong use of super-technological devices; in the common narrative, these disabled athletes are seen as postmodern heroes. In the common narrative, these disabled or superhuman athletes are seen as postmodern heroes. This study wants to focus attention on this narrative, and asks whether the binomial technology /athlete is immune from problems. The horizon could be the use of Converging Technologies, in particular Behavioral Neuroscience, to solve the question.

Biopotenziamento è molte cose; in ogni epoca conosciuta sono esistite persone attivamente impegnate nel migliorare il proprio corpo, sia imparando e perfezionando determinate attitudini con l'allenamento, sia ricercando tecnologie e procedure per ottenere risultati migliori in particolari attività. Un caso problematico è quello degli atleti –particolarmente i Paralimpici- che vogliono incrementare le proprie capacità per ottenere migliori risultati; sostanzialmente hanno tre modi per lo scopo: procurarsi un equipaggiamento migliore, allenarsi affinando le tecniche o con *fitness machinery* efficaci, oppure biopotenziarsi (doping farmacologico, tecnologico, terapia genica, ecc.). Tutti questi mezzi retroagendo sull'apparato cognitivo e sul corpo, ci danno esplicitamente la possibilità di cambiare noi stessi attraverso il loro uso. Negli sport Paralimpici troviamo un forte impiego di dispositivi supertecnologici; grazie a questi, alcuni atleti vengono definiti *supercrip*. Nella narrazione comune, questi atleti disabili o superhuman, vengono visti come eroi postmoderni. Questo studio vuole focalizzare l'attenzione su tale narrazione, e si domanda se il binomio tecnologia/atleta, è immune da problemi. L'orizzonte potrebbe essere l'utilizzo delle Tecnologie Convergenti, in particolare le Neuroscienze comportamentali, per derimere la questione.

Keywords
Convergent technologies, enhancement, supercrip, Paralympic sports.
Tecnologie convergenti, enhancement, supercrip, sport paralimpici.

1. Introduction

In 1956 G. Anders wrote his most important text: "the Obsolescence of Humankind", where he analyzes human feelings with technologies, summarizing that these "go beyond the human by making man something antiquated". In 1980 he published a second volume on the same theme, with the subtitle: "On the destruction of life in the era of the third industrial revolution". After more than forty years we will talk about the fourth industrial revolution, that of Convergent Technologies (CT), that is, *enabling technologies and knowledge systems that mutually support each other in achieving a common goal* (EU-Cordis, 2004).

This will lead to Industry 4.0, (Zamagni, 2019) which includes sectors such as *Nanotechnology, Biotechnology, Infotechnology and Cognitive science* (NBIC).

In Cognitive Sciences, Neuroscience will have privileged space; these indicate "the scientific disciplines that study the organization and functioning of the nervous system, SN, peripheral and central" (Mandolesi, 2012) and involve the use of biological, mechanical and computer technologies for these purposes, as well as the treatment of neurological pathologies.

Technological developments related to neuroscience –neurotechnology- have opened up to the exploration of the biology of the human brain and the SN, highlighting the connections with behavior.

Recently, it has been demonstrated that the brain extends the perception of the body also to the tools that interact with it (Miller et all, 2019); these devices used in real life can be incorporated into what is identified as the Body Schema (BS) (Baccarini et al., 2014; Cardinali et al., 2011,2012).

One of the great techno-scientific fields of application of cognitive neuroscience is that of BCI (*Brain-Computer-Interface*), that is the Brain-Computer connections; from these studies it will even be possible to have a sort of Olympiad -Cybatlon- for athletes supported by BCI technology. It is in this context that *Human Enhancement* (HE) fits; the term refers to the (not essential) enhancement of activities in the fields of genetics, pharmacology and bioengineering (Giglio, 2014). It comes to life in that cultural soup that has been excellently called Liquid-Society (Bauman, 1999; Castaldo, 2020) tailored to individual freedom of choice, where concepts such as *therapy* are reinterpreted: if we can cure pathologies, what can we do for those who are healthy?

The health concept of postmodernity corresponds to *Better than well*, (PCB US, 2003; Elliott, 2003); the role of medicine expands to different areas, such as sexuality, behavior, aesthetics, intellectual performance, sport, with the sole aim of improving individual well-being; with the HE, we pass from *restituito ad integrum* to *trasformatio ad optimum* (Gordijn & Chadwick, 2008; Giglio, 2014).

The laboratory mostly used for technoscientific experiments are the military and sports fields, which cultivate experiments to transcend human performance through technoscientific and biomedical means (Le Dévédec, 2020; Spanish and Giglio 2011). The advancement of the NBIC has led to a very important ethical-legal debate on HE, arousing bioethical and / or technoetic reflections (Pallanzani, 2017); the work we present offers questions about sports activities: Are there any limits? Are there any unknown factors Are there any precautions? These are the questions we face.

2. Converging Technologies & Sport

Technology in all its forms has virtually transformed every aspect of sport and its business, influencing everything, from athlete training programs and sports broadcast production processes to local experiences and stadium construction. Its influence is such that some estimates predict that the global sports technology market will exceed $ 31 billion by 2024 (Brightman, 2017; Long, 2020).

From the amateur to the professional or *elite* level, sport is a highly competitive occupation; very often large sums of money depend on fractions of a second or tenths of a centimetre. Many measurable records have been influenced by the availability of advanced technologies: at the Olympics of 1896, in the pole vault (the pole was made of bamboo) Hoyt won by jumping 3.30 m; the record in 2020 with a fiberglass pole was 6.18m. Sports technology is a means of achieving interests and goals in various activities; it ranges from tools, to machines, to substances and

methods used even outside the competitive context (Loland, 2002).

The literature on these influences or changes is already plentiful, but a good review can be found in Dyer (2015) who analyzes 56 authors with 31 cases over thirty years; Golf in the foreground, followed by Athletics and Cycling. The sports sector which, however, sees the greatest use of technologies - and major issues - is the Paralympic one (Burkett, 2011; Wolbring, 2012; Purdue & Howe 2012).

According to Howe (2011) technology literally pushes the Paralympic Movement where many athletes depend on high-tech prosthetics or wheelchairs. An economic validation of this data comes from the IPC 2019 Report (*International Paralympic Committee*): the influx of investors, with the increase of participants to the Paralympic Games, offers a three-year growth that on average exceeds 9% per year. In 2018, as reported by the *European Sports Tech Report 2019*, the startup sector that combines sport and technologies almost reached € 364 million, an increase of 27.4% compared to 2017. Many Paralympic specialties use wheelchairs, where the construction techniques and materials have evolved considerably; the ultra-light and ultra-resistant ones are made of titanium, with an average cost of up to € 6,000 (Zappile, 2017).

The carbon fiber prostheses of the famous Oscar Pistorius are another example of a highly technological device; Wolbring, (2012) considers them to be devices created to exceed the typical performance of the human species. In this regard, Pallanzani (op. Cit.) consider that modern technologies do not converge, but *must* converge according to the sociomedical *mainstream*, which we can identify in HE. The first Cybatlon took place in 2016: it is a type of competition dedicated to ultra-disabled people who use advanced assistive technologies (BCI helmets, FES Functional Electrical Stimulation devices for amputees and / or para-quadriplegics with innervated prostheses or exoskeletons; it is considered by the media the first Olympics for transhumans or cyborgs (Wolbring 2018).

This is not news, given that we have been talking about- real-cyborgs since the English musician Neil Harbisson had an antenna implanted on his head due to a rare disease - achromatopsia - which does impede people to perceive colors. Thanks to the antenna, the colors are transmitted to the brain in the form of 360 sound waves; Neil sees this technology as an integral part of his body, an extension of his brain, not an accessory. In 2004 he was the first in the world to have *cyborg* identification in his identity card. Thus was born the myth of the *prosthetic panacea* that uses technologies to replace the body or make it obsolete, better known as *transhumanism*.

3. Emerging Criticalities

Over time, the Paralympic Games have gained a high presence of the public and a notable presence of sponsors; they are accompanied by a vast market of aerodynamic, light and resistant wheelchairs, as well as functional and adaptable ergonomic biomechanical prostheses. Sports performance with these technologies sometimes exceeds that of able-bodied people, and the most successful athletes are defined as *Supercrips*, superstorps (Howe & Silva, 2012). According to Berger (2008) *Supercrips* are individuals whose inspiring stories of courage, dedication and hard work show that you can do it, that the impossible can be challenged; they have good media *appeal* and less social stigma on their disability (in Italy we have Bebe Vio and - despite the accident - A. Zanardi).

The postmodern mainstream tends to describe disability from two opposite and intersecting points of view: pietism and heroism. Clogston (1990; 1993), Haller (1995), and Kama (2004) have dealt with the narratives of disability in the media; they divided it into two categories: Traditional and Progressive. In the Traditional one there are the following sub-categories: Medical, Supercrip, Social, Economic; in the Progressive one, there are the sub-categories: Civil Rights, Minorities, Cultural and Consumer Pluralism. The Supercrip even then, was tied to special events, or *superhuman.*

The term is also supported by the IPC which in London 2012, and Rio 2016, sponsored promotional campaigns with fascinating videos, having one word in common: Superhuman!

The consequence was - beyond the enormous publicity - a decrease in participation of the number of disabled people in sport by 10% (Coles, 2018). It is not surprising, considering that the other side of the coin of the superhuman's are the disabled humans, with little means, little motivation, little institutional support; Supercrips do not endorse disability, but their ability!

We must also note as a correlation, that even among Paralympic athletes, cases of doping have been detected, including the terrible practice of *boosting* (Bhambhani et all, 2010).

Another important critical element comes from A. Iossa Fasano (psychiatrist) who in 2013 in one of his studies, postulated the "Bionic-prosthetic paradigm", where he poses the problem of the prosthetization of people, noting the *paradox of a mutation of the body experienced as a pathological alteration of psychic identity […] characterized by disturbing disorientation that can paralyze or push to impulsive and angry action*.

Analyzing and studying cases of people with prostheses, the author explains that "the Cyborg, a figure coming from science fiction and today observable in everyday life, is the one who, out of desire for improvement and embellishment or for life-saving necessity, must bring devices or organs from auto or hetero-transplant (sometimes from corpse) that alter the perception of oneself and the sense of identity. We no longer recognize ourselves and it is not possible to govern a possible connection to the self.

4. Conclusions

In 1997, Steadward & Peterson wrote the text *Paralympics: where heroes come*; unknowingly they triggered the diffusion of the term *Supercrip.* We do not think it is a pleasant expression; together with *Superhuman* or *Superathlete*, it is a stereotype, created by able-bodied people, responding to the phenomenology of the race and the exaltation of the event.

The *Supercrip*, suggests that all Paralympics are super, but in reality, no one ever talks about the super second or super third or the poor disabled from poor nations; a winner becomes famous, because he is a disabled person so able as to be acceptable (by the able-bodied).

The exceptional character of some athletes must be assessed on the criteria that respect the specific ethics of the Paralympic Games and must not be based on the premise that impairments make people special. If we want athletes with disabilities to be seen as real athletes and not as *Supercrips*, media coverage must play a significant educational role in increasing public awareness of the specificities of the Paralympics, namely, classifications, sports, performance, records, with the aim of informing and educating.

As for the issues of the relationship between the body and technologies, they are now a consolidated area of study; they are also part of the Paralympic Sport, where the use of high technologies are a key factor in winning.

With the evolution of CT and HE, prostheses are no longer a simple device to replace missing parts or to disguise the appearance, but can become part of the embodied identity and visible materiality of the disabled athlete (Tamari, 2017).

Further confirmation of this assumption also applies to wheelchair athletes: Harry Low in 2019, for the BBC, interviewed a number of disabled people who claimed to feel the wheelchair as an extension of themselves; Bronwyn Berg, in one of the interviews, affirmed to have covered her wheelchair with pointed wedges, "so as not to be touched".

The study we are proposing has no preclusions towards TCs or towards the postmodern direction of the HE, or other moral positions; we are grateful to the scientists who have particularly improved the lives of the disabled.

However, let us ask some unresolved questions: can the enhancement resulting from the use of CT influence human or sports behavior? If so, accompaniment, formation, and also checks are needed. Some answers could come precisely from the use of CT, using, among the NBICs, the sector of Behavioral Neuroscience or Neuropsychology; could help with their specific, and related analysis, resolution of issues between Emerging Technologies, Human Enhancement and Paralympic Sports.

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