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Boxing and its Societal Effects: A Literature Review

A report commissioned by the All-Party Parliamentary Group for Boxing

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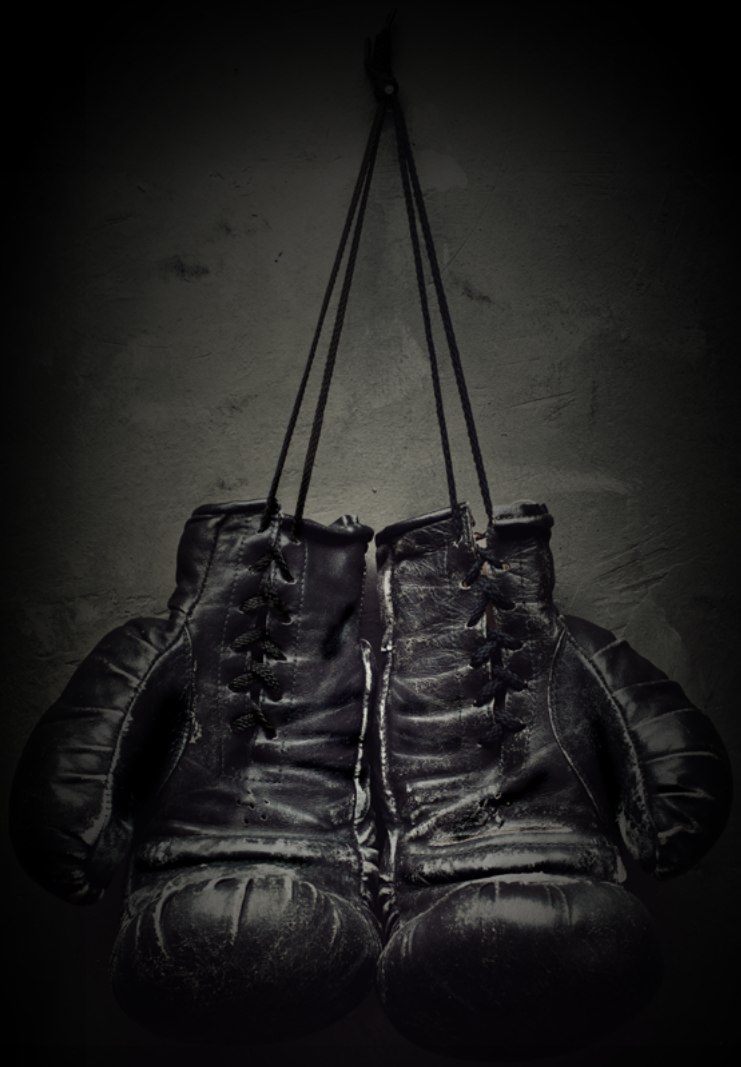

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Foreword to the literature review of grassroots boxing

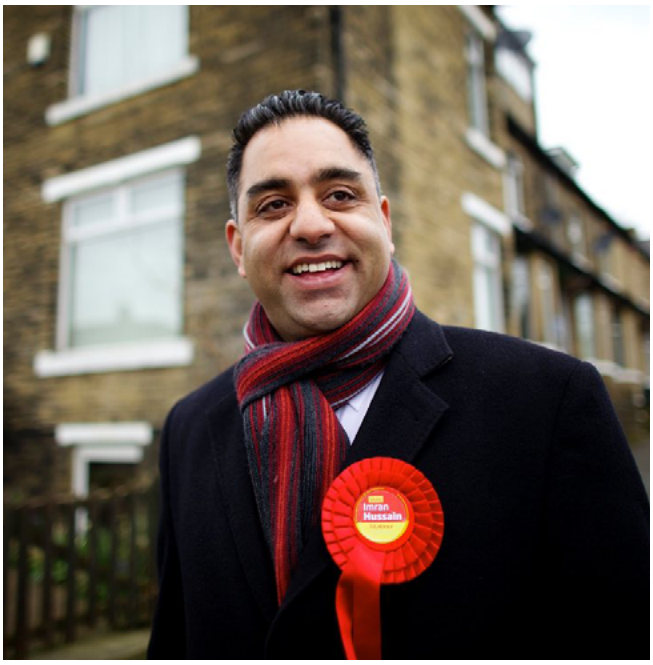
As the Chair of the All-Party Parliamentary Group (APPG) on Boxing, I am pleased to be able to write the foreword to this literature review which was commissioned by the APPG to look into the societal effects of boxing.

For thousands of people across the country, boxing is far more than just a spectator sport that is played by elite athletes for championship titles or Olympic medals. It is instead a pursuit of both the body and the mind, sharpening physiques in all body types and instilling discipline in even the most wayward personalities in a way that few other sports can.

As a sport that can be played, practised and enjoyed with even the most basic equipment and facilities, and a sport that can be taken up simply by showing up at a local club, boxing is also one of the most accessible sports around, with many fantastic grassroots clubs across the country and particularly in my home city of Bradford supporting amateur players of all ages and abilities.

Consequently, given the almost unique qualities of boxing as a physical and mental sport, and its accessibility to everyone across society, boxing is, as this literature review highlights, a sport with huge benefits far beyond the professional arena, with immense societal impacts on crime, mental and physical health, and educational outcomes. This is also why investing in grassroots and amateur boxing facilities is so important not just for the nation's sporting prowess, but for our well-being as a nation too.

However, whilst these benefits are well recounted, with police forces up and down the country in particular singing the praises of grassroots boxing's role in getting troubled young people off of the streets, these benefits are also sadly little understood. As a sport that is often viewed negatively by many and a sport that has predominantly working-class players, there has been little limited quantitative evidence gathered on the positive impacts that boxing, particularly at the amateur and grassroots level, actually has.



Consequently, the APPG on Boxing commissioned this review as a follow on from Boxing: The Right Hook (2015) which explored how boxing could help young people after the London Riots in 2011, and concluded that boxing helps young people let go of some of their frustrations, as well as create a family environment that some players may sadly be lacking. Whilst not disputing the positive impact of boxing, our new review goes a step further, with both Dr Jump and Dr Hills making valid assertions that as much as boxing is a positive influence on some people, and can make a valid contribution to society's problems surrounding crime, mental health, and poor educational attainment, more evidence is needed.

Moving forward, the APPG on Boxing will therefore seek to work with the UK's academic and sporting community to establish robust, proven evidence of the societal effects of boxing to go beyond the extensive anecdotal evidence that exists, and to reliably inform us of just how great the benefits of boxing at the grassroots level are to society.

Imran Hussain

Imran Hussain MP
Chair of the APPG on Boxing

Anecdotally, boxing is assumed to make positive contributions to society (APPG Boxing, 2015). However, it is currently unknown the extent to which credible evidence supports these assumptions. This report has been commissioned by the All-Party Parliamentary Group (APPG) for Boxing to understand the existing evidence of the societal effects of boxing. To this end, researchers from Manchester Metropolitan University and London Metropolitan University have undertaken a literature review of boxing and its societal effects.

1. Scope of the Literature: Types of Societal Effects

The researchers undertook an extensive review of existing research into the societal effects of boxing, including academic literature in the form of research articles in peer-reviewed journals, but also non peer-reviewed reports. Searches in academic databases (e.g. Google scholar, JSTOR, PsychInfo, Sage Journals, SCOPUS, SWETSWISE) were undertaken. Initially, broad key word searches (e.g. "boxing AND society", "boxing AND benefits", "boxing AND effects") were undertaken, which then informed more targeted key word searches (e.g. "boxing AND social capital", "boxing AND crime", "boxing AND offending", "boxing AND violence", "boxing AND youth", "boxing AND gangs", "boxing AND education", "boxing AND academics", "boxing AND health", "boxing AND mental health"). From these searches, research relevant to boxing and societal effects was identified. The reference lists from these articles and papers that have subsequently cited these articles were then reviewed to identify any additional relevant research not identified from the key word searches. Finally, the key word search was repeated in mainstream search engines so to identify any relevant research reports outside of the academic literature. This search returned research on the following topics:

- Boxing and Social Capital
- Boxing and Crime
- Boxing and Positive Youth Development
- Boxing and Education
- Boxing and Health

So to fit the brief of establishing what is the existing evidence of the societal effects of boxing, this review will consider research on these topics against the different standards of evidence for societal effects.

2. Standards of Evidence for Societal Effects

So to determine the extent to which evidence supports the assumptions that boxing makes positive contributions to society, the well-established standards of causal inference were adopted. According to Heckman and Smith (1995), the ideal scenario by which effect can be determined is the concurrent observation of a given person in both the state where they are participating in the social policy intervention and the state where they are not. From this, effect can be calculated by comparing the outcomes from both states. Given the physical impossibility of the concurrent evaluation of the same individual in two states, it is necessary to compare separate groups in the two states. An experiment involves a researcher having control of the variables under investigation and over the environment in which those variables are observed, from which change is introduced and its consequences measured (Burtless, 1995). In the context of this literature review, the change being considered is the participation in boxing or a boxing-based intervention. So to establish the effect of boxing, it is necessary to make a credible comparison between boxing participants (i.e., the experimental group) and non-participants (i.e., the control group). In order to accurately measure the effect of boxing, there should be no differences in characteristics between boxing participants and non-participants that may influence the societal outcomes that are of interest (Burtless, 1995). The means by which participants are assigned to each condition influences whether there are any differences in characteristics or not. Where differences have been systematically created by means of assignment to condition, selection bias is said to be present.

Selection bias is a practical estimation problem caused by unmeasured differences in characteristics between boxing participants and non-participants (Burtless, 1995). Such differences can occur if participants volunteer or self-select themselves to participate in boxing (Hakim, 2000). For example, desire to be more physically fit may affect the willingness of a participant to join a boxing club and both variables (desire to be physically fit and being a member of a boxing club) may be correlated with the outcome variables being measured, such as physical fitness (Burtless, 1995). In such circumstances it is not possible to isolate the effect of boxing because it is confounded by self-selection effects (Hakim, 2000) and uncertainty about the presence, direction and potential size of selection bias will limit the reliability of estimates of effect (Burtless, 1995).

Randomised Controlled Trials (RCTs) and quasi-experiments are the prevalent methods by which effect is evaluated (Burtless, 1995), but which differ in the construction of experimental and control groups (e.g., boxing participants and non-participants). RCTS, by definition, randomly allocate participants to experimental and control groups, whereas these groups are non-randomly constructed in quasi-experiments. As such, quasi-experiments are subject to selection bias, limiting the effectiveness by which they can measure the societal effects of boxing. RCTs provide a simple solution to the problem of selection bias (Heckman & Smith, 1995), which can be eliminated if randomisation is present (Hakim, 2000). Randomisation involves allocation of participants to the experimental or control groups on an entirely random basis, regardless of characteristics or preferences. Through randomisation RCTs generate a control group of participants who would have participated in boxing, but who were randomly denied access (Heckman & Smith, 1995). Both groups are equal in all aspects relevant to the study with the exception of being in the experimental or control groups, which isolates the effect of boxing. According to Burtless (1995), random assignment removes any systematic correlation between condition and participant characteristics and provides a persuasive case of an internally valid (i.e., unbiased measure) effect of boxing.

Although random allocation is the only wholly satisfactory means of achieving equivalence between boxing participants and non-participants (Fisher, 1928), it is not always feasible. For example, although, in medical trials it is feasible to randomly allocate participants to receive the drug or the placebo, it would be unethical and unfeasible for boxing clubs to turn participants away and still collect data on their societal outcomes. Furthermore, in the context of boxing-based interventions, withholding beneficial interventions from a group in need of such an intervention is argued to be unethical and something that programme administrators find difficult to justify in the interest of research (Hakim, 2000).

Where random allocation to condition is either not feasible or desirable, there are observational designs which mimic random allocation to condition, such as natural experiments, instrumental variable designs and regression discontinuity designs. However, although these designs overcome the ethical dilemma of withholding beneficial interventions, encountering situations that meet the causal inference assumptions of these designs (e.g., where we can be confident that the natural mechanism by which allocation to condition is in effect random) is rare. Therefore, there are limited opportunities to apply these designs to measure the societal effects of boxing. Quasi-experiments and observational designs that make use of statistical techniques that attempt to correct for selection bias provide greater opportunities to determine the effect of boxing on societal outcomes. Adjustment methods can be used to limit selection bias by either holding observable and measurable differences constant in regression models or constructing a control group by matching control group participants to experimental group participants on the basis of observable and measurable variables. Such techniques in constructing control groups are reliant upon measurable background variables. According to Burtless (1995), even if analysis fully controls for the effects of all measurable characteristics, it is still possible that there are systematic differences in unmeasured characteristics between participants in the experimental and control groups, which influence outcomes. Because these factors are unknown and cannot be estimated, the amount of bias is unknown. As such, RCTS remain the gold standard in controlling for selection bias and measuring the societal effects of boxing. However, where sufficiently rich data on potential differences between participants and non-participants exists, it is possible to construct control groups that are virtually identical to a RCT control group (Heckman & Smith, 1995). Where a control group cannot be accessed at all, a pre- and post-experiment may be used, which, via repeated measures, compares the same participants in two different states (e.g., before and after they participated in boxing). Although the groups are made up of the same individuals, there are differences between the groups because of differences in the individuals at different times, beyond the boxing participation, which limits the strength of causal inferences about boxing participation.

To sum up, for research to be considered evidence for the societal effects of boxing, first, it should quantitatively measure, rather than qualitatively describe, societal effects. Qualitative research methods, such as ethnographic research, focus groups or interviews, are interpretive methods that describe individuals' experiences of societal effects, so to provide useful information about the conditions under which societal effects can be achieved, but are not methods by which societal effects can be measured. There should be some counterfactual, in other words, what would have been the societal effect had the boxing participant not experienced boxing? A RCT is regarded as the 'gold standard', followed by designs that mimic random allocation to condition, followed by methods that control for observable differences between conditions and lastly quasi-experiments, which are subject to selection bias and omitted variable bias. Furthermore, consideration will be given to the statistical power of evidence; that is whether the sample size was sufficient so to find an effect, if there is an effect to be found.

3. Boxing and Social Capital

Barrett, Edmondson, Millar and Storey (2020), commissioned by England Boxing, undertook research "evaluating the impact of boxing clubs on their host communities". However, contrary to this title, the study makes no attempt to evaluate the impact of boxing clubs on their host communities. Rather than measure impact, the research opens with un-evidenced assumptions that "boxing is generally regarded as being more successful than others in terms of engaging with participants from minority groups, suffering from multiple deprivation, in what are often challenging locations" and that in tackling social exclusion boxing clubs are "so successful in engaging with participants from deprived areas and under-represented socio-economic and ethnic groups" (p. 24) before undertaking research to understand why boxing and boxing clubs are so successful.

This research echoed previous research into the role of boxing in development by Hills and Walker (2016), also commissioned by England Boxing. Hills and Walker (2016) found that boxing played a role in development by being located at the heart of social problems, such as gang involvement. Equally, Barrett et al. (2020) argue that boxing clubs are successful because of their "location, location, location". Hills and Walker found that boxing plays a role in development because there is nowhere to hide in the sport, which makes it a demanding vehicle for development, a finding duplicated in the work of Barrett et al. (2020), who identified no hiding places as a success factor for boxing. Hills and Walker (2016) also found that boxing coaches serve a role in development because they have walked in the footsteps of target groups, such that they come from the same community and have been through the same problems. Similarly, Barrett et al. (2020) identify that boxing clubs are successful because they are in the community, by the community and for the community. Hills and Walker (2016) found that boxing coaches serve as respected and relatable role models and that the boxing club served as a new support system. Again, this finding was duplicated in the findings of Barrett et al. (2020), who found that boxing coaches served as more than coaches. Hills and Walker (2016) also found that boxing coaches and clubs are effective at establishing clear boundaries for participants, a finding duplicated by Barrett et al. (2020). Finally, Hills and Walker (2016) found that boxing demands discipline, focus and work ethic, another finding duplicated by Barrett et al. (2020). Given the similarities between these two reports and that they were both commissioned by England Boxing, it is a highly questionable use of limited funding available to research boxing. Although the work of Barrett et al. (2020) is superior to that of Hills and Walker (2016) in terms of sample size, it is limited in terms of the validity of reporting impacts, which is not claimed by Hills and Walker (2016), and is based upon accounts from exclusively coaches, whereas Hills and Walker (2016) collected qualitative data from coaches and participants.

Probably the most famous research of boxing is Wacquant's (2004) ethnographic study of a Chicago inner-city gym. Wacquant observed cases of, but did not measure, boxing promoting cohesion in communities, and creating what he refers to as "an island of stability and order" (p. 31). Put simply, boxing gyms offered routine and structure to lives that may lack order and stability. This is a reoccurring theme in the boxing literature (Deuchar 2016; Jump 2020; Sorgaard 2016; Woodward 2008), and one in which the assumed effects of boxing lie. The gym is often cited as a space of acceptance, family, and enjoyment, as Wacquant (2004, p. 69) has observed: 'The emotional attachment to one's gym, which boxer's readily compare to a "home" or a "second mother"', is testament to the protective and nurturing functions boxing possesses in some men's eyes. Furthermore, Trimbur (2009), in her study of an urban boxing gym in New York, describes cases of the boxing gym serving as a site of re-entry (a term used in criminal justice to highlight return from prison) and how the boxing gym can offer a safe space to those on release. Trimbur cites the nurturing function of the gym as a space whereby men released from prison were able to share their stories, and also seek support from other members in their communities. This can be a key factor in the hooking potential of boxing gyms.

4. Boxing and Crime

Fight for Peace (FFP) is a global brand that has a presence in over 25 countries. Founded as an NGO in Brazil in 2000, FFP operates via a public health model, and has developed a three- tier approach to violence prevention. At the primary level, FFP offers open access boxing and martial arts provision to communities affected by crime and violence. At a secondary level, FFP focuses on young people who may be 'at risk' of violence, either as perpetrator or victim. Lastly, the third- tier focuses on those already embroiled in violence and criminality, and thus seeks to prevent them reoffending or becoming a repeat victim.

By attributing national cost benchmarks to Fight for Peace programme outcomes, Ecorys (2012), in their report 'Sport scores: The costs and benefits of sport for crime reduction' commissioned by the Laureus Sport for Good Foundation, estimated that FFP "resulted in 165 crimes being avoided, delivering £1,059,471 worth of savings to society" (p. 24). This estimate was based upon a survey of 58 participants, yet generalised to 800 participants. However, the minimum sample size required for a population of 800, based upon the social sciences standard of a 95% confidence level and 5% margin of error, is 260. Therefore, the data collection only delivered 22% of the required sample. Furthermore, the estimate that 165 crimes were avoided is based upon hypothetical scenarios that participants were asked to imagine, rather than a comparison of crimes committed (i.e., actual measured behaviours) between participants and a control group. Similarly, the FFP 2018 annual report stated that 87% (n=727) of those attending the Open Access tier one provision disclosed that they are less likely to commit a crime based on their self-reported measures post FFP intervention. Tier two support programmes report similar successes and FFP report that 100% (n=35) of those attending disclosed that they are less likely to join a gang or commit crime. Again, the counterfactual being used to determine effect of FFP is a hypothetical scenario, rather than a control group. Likewise, Sampson (2015) undertook independent evaluation of the FFP Pathways programme, a programme specifically focused on employment and reduction of offending, and reported that 79% were less likely to join a gang as a result of attending the programme, and 78% were less likely to commit crime, moreover, 75% said they were less likely to carry a weapon. As with Ecorys (2012), these results are based on a very low sample size (n=18) and hypothetical scenarios, rather than using a control group as the counterfactual.

As such, even collectively, the FFP research falls short of the standards required to validly conclude that boxing has an effect on crime reduction. That is not to say that FFP does not contribute to crime reduction, just that these studies do not provide credible evidence for such an effect. In particular, Ecorys (2012) focused on attributing accurate cost benchmarks to outcomes, seemingly overlooking how to robustly attribute outcomes to the programme.

Jenkins and Ellis (2011) evaluated the impact of combat sport participation on individual criminality. However, rather than collect data from a control group, researchers asked respondents to self-report how participation in combat sports had changed their lives, thus failing to provide a counterfactual in order to establish effect. The outcomes of making a participant less violent and aggressive, coping with stress, less likely to engage in violent assault, less likely to engage in drug abuse and making them deal with conflict differently were measured via a seven point Likert scale and the overall mean of 2.2 was interpreted as positive. However, on a 7 point Likert, this overall mean is below the mid-point, suggesting the use of a biased scale that does not have any impact as the mid-point and negative and positive impact either side. Rather, it appears that one was no impact and all other points on the scale deemed as positive. Finally, the sample size of 50 does not provide sufficient data to generalise the very limited findings to combat sport participants generally. The authors reported that 62% of the sample experienced a possible reduction in perceived violent and aggressive behaviour since participating, suggesting that combat sports have a cathartic effect.

A report titled Boxing: The Right Hook by the All-Party Parliamentary Group for Boxing (2015) reports on several benefits of boxing. In terms of crime reduction, it uses only two cases of Yate ABC and Leyburn Road Mosque to evidence the policing and criminal justice effects of boxing. With regard to Yate ABC, the report states "the establishment of a boxing club in June 2008 coincides with a gradual but significant decline in the number of antisocial behaviour calls received by the local police" (p. 16). However, from the data provided the number of antisocial calls starts to significantly reduce in December 2007, a trend which does not alter in June 2008, suggesting that something other than the boxing club, such as efforts of local police, was responsible for the trend reversal in December 2007. The report also attributes a drop of the issuing of anti-social behaviour orders from 125 in July 2012 to 66 in July 2013 in the local area to the introduction of boxing as an activity at Leyburn Road Mosque. Without counterfactual data, more specific detail on when boxing was introduced and data from other months either side of the introduction of boxing, this evidence is equally unconvincing.

The All-Party Parliamentary Group for Boxing (2015) report also makes claims about solving anti-social behaviour and gang culture as a benefit of boxing on the basis of anecdotal accounts from two boxing participants. One had reported observing gangs, but never participated in gangs, and self-reporting that he would have joined a gang if he had not taken up boxing. In other words, the counterfactual is the un-evidenced possibility of joining a gang, even though he had not previously been in a gang prior to taking up boxing. Another account is of a boxing participant who participated in the London Riots, but is now talking about attending university, which is not the same as actually attending university.

Wright (2006) studied boxing and criminality and outlined what she believed to be the benefits of boxing, based on her observations and interviews in the USA:

- Identity based on valuing respect and pride above toughness
- Provides/promotes safety during dangerous high crime periods
- Emotional skills aiding development into law abiding adults
- Using defence as a metaphor for conflict resolution
- Learning patience/becoming less impulsive
- Ability to focus and for longer periods of time
- Gaining a sense of meaning, hope and self-esteem beyond losing friends/relatives to violent crime, incarceration or encountering violence in daily life
- Learning respect for others
- Relieving stress which could otherwise be released as violence
- Promotes and provides mutual aid/support from the group training atmosphere

Wright (2006) suggests that these facets contribute towards creating a safe space. A space that allows young people to have a sense of belonging that nurtures shared group experiences and shared awareness of the issues affecting them. In particular the shared experience of lifestyle choices. Wright believes that the choices facing young people hover between the seductive nature of violence and gang identity, and the accompanying feelings of loss and omnipresent violence that surrounds them. However, this collectivist approach, according to Wright (2006, p. 172), allows young people to "feel honoured and valued", and therefore helps "build a respectful relationship with the adult leader and fellow members, creating a safe space for growth and change". These findings provide direction for quantitative research to measure the effect of boxing on criminology.

Work by Deuchar et al. (2016) states that boxing can be a good way for young men to accomplish masculinity. This Danish study argues that young men can locate their masculinity in what he refers to as 'boxing transformation narratives'. These transformation narratives allow young men to locate their masculinity in sport and overcome criminal attitudes by replacing them with masculine sporting ones. Put simply, the messages young men receive in gangs can be turned around and relocated in the ring. Overcoming adversity, replicating brotherhood, and feelings of belonging, as well as competitiveness and respect are all part of transformation narratives. Indeed, boxing is seemingly able to offer many of these things, and many professional boxers over the years have discussed how the sport turned their lives around, especially those that were affected by crime and economic disadvantage[1]. However, according to Jump (2020a), we must exercise caution in presuming that boxing is a panacea for all crime and disorder, and focus more closely on the mechanisms by which positive change can be achieved. Jump (2020a: 2) writes: "It is easy to fill boxing gyms with recalcitrant youth and walk away, hoping for a more disciplined and respectful one to walk out, yet this is not always the case."

Accordingly, more research needs to be done into the mechanisms by which boxing proclaims to reduce criminality and violence, and support provided to boxing gyms to further develop their hooking potential. Boxing may have a propensity for increasing social capital and attracting large numbers of young people to their doors, and this needs to be harnessed into more meaningful change. Jump (2020a) suggests that boxing can be a successful hook for change, but more works need to be done on the mechanisms by which that change can be achieved. She suggests that to be successful in reducing serious youth violence among the boxing community, coaches and participants need to be able to challenge the masculine scripts that see violence as a way to accrue respect.

This is in response to evidence from previous studies in USA and Europe suggesting (Edreson & Olweus 2005; Forbes et al 2006); that combat sports (boxing, MMA, wrestling) when juxtaposed with hyper-aggressive masculinity can have negative effects on young men's attitudes towards women, sexual violence, homosexuality, and domestic violence. Jump (2017; 2020a; 2020b) therefore argues, that by working closely with young men in helping to unpick their previously held notions of respect and masculinity, coaches are able to offer a more 'inclusive masculinity', championed by the likes of Anderson (2009) in his work around rugby, violence and masculinity.

If these incidences of hyper- aggressive masculinity and perceived disrespect can be challenged and explored in ways that do not emasculate young men, boxing has a real opportunity to champion inclusive masculine ideals. Evidence from Deuchar et al (2016); Soorgard et al (2016); Jump & Smithson (2020) advocates for the use of 'boxing transformational narratives' as a way to do this, whereby young men can potentially perceive 'walking away' from serious youth violence as another version of accomplishing masculinity and reconfigure their previously held notions of respect to incorporate a less aggressive and retaliatory response. These ideas are further supported with studies from New Zealand (Hemphill et al 2019) and Canada (Moreau 2018), whereby these studies argue for a more positive, strength- based approach to reducing criminality and increasing positive attitudes towards others

1 *From Drug Offences to Heavyweight Stardom: The Making of Anthony Joshua is a prime example of this (The Independent, 6 April 2016)*

5. Boxing and Positive Youth Development

Studies that use positive youth development (PYD) approaches have demonstrated considerable success in engaging young people. PYD is an approach to youth work that is grounded in the belief that all young people have strengths and skills that can be cultivated in a positive manner, especially when working from a strengths- based approach and when aligned with appropriate resources. Lerner (2017) suggests that PYD approaches occur most effectively when young people have positive relationships with peers, adults, and institutions. A study in New Zealand that used the tenets of PYD in a boxing context, suggested how boxing- based PYD can be used to enhance (a) physical, (b) intellectual, (c) emotional (d) social development as assets and tools for change. Using boxing as a vehicle for positive change, Hemphill et al (2019) discussed how the developmental processes listed above were applied to life skills in three boxing academies, and whether these skills could be applied outside the gym. The life skills that the gym aimed to develop and enhance were; respect, responsibility, compassion, consideration, kindness, duty, obedience, and honesty. These concepts were framed in the youth programme Passport to Success by the Billy Graham Youth Foundation.

41 young people participated in the Passport to Success programme and reported that they had developed an understanding of the life skills presented; being more aware of the ways in which these skills might be applied outside of the boxing gym. Many of them gave specific examples of the life skills having a tangible and positive impact on their lives outside the gym. For example, one male participant reported: "If people called me names I would punch them and now [coach] has taught me how to control that" (Hemphill, 2019, p. 8). One senior boy explained that he previously had 'a bad temper' but 'I came here and you know my tempers got a bit better and my people skills are better' (Hemphill, 2019, p.8).

Youth participants also recognized that life skills are relevant to different contexts. For example, when asked which skills were more important the participants explained that 'no one [life skill] is better than the other because they all tell different messages.' Another participant elaborated to explain that 'maybe in one situation respect or responsibility would be more important than honesty and truthfulness, they each have their own strengths.' (p. 9). Hemphill (2019) therefore concluded that the focus groups and interviews revealed examples of students using a cognitive bridging process to connect life skills with other areas of their lives. When these examples of transfer are considered through the lens of the transfer framework, some of the youth participants had developed cognitive connections between what was happening in the gym and their outside lives, but this falls short of proving that boxing has an effect on positive youth development, which requires quantitative research using a counterfactual.

Although Hemphill's (2019) findings was not observed among all participants, the study adds to the knowledge base of transfer of learning by using the cognitive bridging process as a lens to observe the process by which youth begin to understand how life skills apply within and beyond the sport context, as identified by Jacobs and Wright (2018). Put simply, the lessons learnt in the gym environment can be transposed to the outside world when delivered alongside strength-based approaches such as PYD, and supported and contained by positive relationships with coaches and gym staff. Having said that, Gordon and Doyle (2015) state that it is also important to further consider the wider implications of life skills beyond the family and school for the young people on the programme, and that youth participants may therefore require more specific support to help transfer life skills in more abstract ways. Coaches should perhaps do more to promote transfer by identifying authentic opportunities for youth to use their life skills outside of sports (Holton and Baldwin 2013) and consider practices that help youth think through their life skill utilization within the gym in addition to their focus on behavioural outcomes beyond sports (Jacobs & Wright 2018).

Recent studies of boxing cite the bond between the coach and boxer as key (Hills & Walker, 2016; Barrett, et al., 2020; Dortants and Knoppers 2012; Ferguson et al 2018; Sacha 2017; Scandurra 2015), arguing that a positive mentoring relationship can help individuals overcome adversity and provide positive role modelling for young people. The impact of this social bond can take many forms, and Hirschi (1969) in his study of delinquency and social bonds defines it by four dimensions: (1) attachment to person/institution (2) commitment to social relationships (3) involvement in the activity occupying the mind (4) belief in the moral validity of social rules. Hirschi argues that young people need attachments to develop value consensus, and that the four dimensions above need to be present to enable young people to positively flourish.

Applying this theory to boxing, participation should increase attachments to coaches, teammates and institutions and the bonds to these influences should arguably reduce individual tendencies towards aggression and delinquency. The actual participation in the sport should allow for the boxer's commitment to conventional lines of action, as the penalties imposed for breaching the rules would result in an individual's loss of social status. Additionally, the time required to practice and be successful, should increase involvement, and with this, a decrease in time spent on other non-conventional/illegitimate activities (Walpole et al 2018). Also, because the rules and values of sports are assumed to lie in the value system shared by conventional society, participation in sports should increase an adolescent's belief in the moral order, and therefore promote pro-social behaviour (Fitzpatrick et al 2015). Indeed, many youth sport initiatives have explicitly promoted pro-social behaviour through the learning of fair play, teamwork and conventional values (Cryer 2005), and this element is considered extremely important in reducing and sustaining desistance from violence and delinquency.

Case and Christophe (2019) in their study of youth development in a community boxing gym in Detroit, argue that self-efficacy is important in promoting self-mastery, and in turn, promoting healthier relationships. Participant narratives in this study suggested the structure of and activities in the gym helped them to feel more capable of success in many facets of their lives. In particular, the participants described an increased "confidence" in their abilities to manage their emotions and efforts, leading them to believe they could be successful both in school and in life. Participants reported that experiences with the tutors at the gym were memorable and impactful, allowing students to "experience scholastic success, cultivate a genuine interest in the subject matter, and perceive themselves as more capable in academic contexts" (Case & Christophe, 2019, p. 175). Adults in the gym also appeared to be a major mechanism by which student self-efficacy increased. Students perceived the adults in the gym as being very invested in them; instances of verbal persuasion where adults told students they were capable of success, therefore, seemed to help students feel able to succeed both inside and outside of the gym. Students in the gym who were successful academically, socially, and in the boxing ring also served as examples to their peers. Through watching these successful peers, participants reported vicarious experiences where they started feeling capable of similar success.

All this considered, existing research suggests that boxing has the potential to contribute to PYD, although there does not yet exist any credible evidence for the effect of boxing on PYD. Using boxing in a strength -based approach to youth development may have a positive impact on young people's potential educational outcomes, life skills, cognitive processing, and attitudes towards delinquency and peers. Moreover, when delivered correctly and with the right staff, the value systems and moral framework required for criminal desistance has the potential to transpose outside the gym environment, as seen with the work of Wright (2006), Deuchar et al (2015), Jump (2020a) and Jump and Smithson (2020).

6. Boxing and Education

According to Nevill and Van Poortvliet (2011), a report commissioned by the Laureus Sport for Good Foundation, for every £1 invested in the Boxing Academy, £3 of value is created for the young people it works with and for society. However, this finding is based upon only 17 young people who joined the Boxing Academy in 2007 and left in 2009. This is highly unconvincing on two counts. First, although the size of the population of interest is not reported, 17 is a small sample with very weak statistical power from which to make conclusions about effect. Second, the small sample size is justified on the basis that these 17 pupils had the most complete data on outcomes, which suggests a large degree of bias in the data given that complete data on outcomes is likely highly associated with the students that remained in the programme. Any students that dropped out or who were again excluded would not have been included in the analysis, resulting in an over-estimation of the economic value of the Boxing Academy. Furthermore, in order to draw conclusions about the societal effects of boxing, the ideal scenario requires a comparison to a control group who experience the same conditions with the exception of the treatment variable of interest; boxing participation.

Nevill and Van Poortvliet (2011) make use of Pupil Referral Units (PRU) as a control group for their counterfactual data, which makes the flawed assumption that the Boxing Academy is a PRU with the addition of boxing. This is not a fair comparison because, throughout its history, the Boxing Academy has never operated as a PRU. It originated as a charity on 2007, registered as an independent school in 2014 and was converted to an AP (Alternative Provision) Free School in 2015. Whereas the Boxing Academy aims to offer high quality education and development, PRUs are not focused on education and development, but rather on reintegrating pupils back into mainstream schools (Meo & Parker 2004; Morris 1996) at the expense of sound pedagogical practice (Meo & Parker 2004). Furthermore, PRUs have been criticised for simply being in existence to meet the Local Education Authority's (LEA) responsibility of housing permanently excluded pupils (Hill 2007) and for, in effect, being dumping grounds for challenging pupils that mainstream schools are unwilling to take on (Morris 1996) with staff that view excluded pupils as uneducable (Gazeley 2010). As such, in using PRUs as a comparator group, the effect of the Boxing Academy has been over-estimated and should have been based on a comparison with other equivalent independent schools, which would have offered a less favourable but fairer comparison. That is not to say that the Boxing Academy does not provide economic value, but that the study undertaken does not establish this.

Ecorys (2012), estimated that "the lifetime educational and employment impacts of Fight for Peace are valued at £2,456,861" (p. 24). However, as previously discussed, this estimate is based upon an insufficient sample and does not use a control group, so to establish the counterfactual. The All Party Parliamentary Group for Boxing (2015) report 'Boxing: The Right Hook' describes cases of schools that include boxing in their curriculum, but provides no evidence of education improvement, other than a head teacher reporting that she had noticed that students' had increased confidence across a range of subjects and the exam results of a single pupil. Despite access to measurable data on academic attainment in the form of exam results, the only exam results reported are for a single student who completed GCSEs in English and Maths (but for which grades were not reported) and a Merit in BTEC Level 2 Sport.

7. Boxing and Health

Baird et al. (2010) reported that, between 1950 and 2007, there were 339 mortalities due to traumatic brain injury caused by the biomechanical forces in boxing. There has been a considerable amount of research into the neurological consequences of boxing and, although the quality of this research has previously been inconsistent in quality (Loosemore, Knowlees & Whyte, 2002) due to the ethicality of randomly allocating humans to receive blows to the head, more recently the neurological consequences of boxing have been established in experiments. In a quasi-experiment, Graham et al. (2011) compared boxers who received predominantly punches to the head and boxers who received predominantly punches to the body. On the basis of blood samples that were taken before and five minutes after each contest, it was found that boxers who received direct blows to the head had significantly higher serum biomarkers for brain injury. In another quasi-experiment, Neselius et al. (2013) found that, in comparison to a control group of 25 non-boxers, 30 Olympic boxers with at least 47 bouts, on the basis of blood tests within six days of a bout where none of the boxers had been knocked out, had elevated levels of tau in their plasma, which is a marker of cognitive impairment and an early marker of Alzheimer's disease, suggesting that boxing causes minor central nervous injuries.

Most recently Di Virgilio et al. (2019) undertook a Randomised Controlled Trial (RCT) to investigate the effects of repetitive subconcussive head impacts from boxing sparring. Twenty amateur boxers were randomly assigned to the condition of participating in three 3-minute sparring bouts and twenty control participants were randomly assigned to participate in three 3-miute non-contact mock-sparring bouts. Parameters of brain function and motor control were assessed prior to sparring and again immediately, one hour and 24 hours post-sparring.

One hour after sparring participants showed increased corticomotor inhibition, altered motor unit recruitment strategies, and decreased memory performance relative to the control group, before returning to baseline levels after 24 hours, establishing that boxing results in acute, but transient, changes to the brain. Although the sample size is low in the aforementioned studies, thus limiting the statistical power and generalisability of the findings, there is undoubtedly a growing body of robust literature establishing the negative neurological consequences of boxing participation.

Research with vulnerable young people in the criminal justice system supports a growing awareness of the impact of trauma and adverse childhood experiences (ACEs) and its links to Serious Youth Violence and exploitation[2]. Indeed, the Home Office recently acknowledged that 'through understanding the impact of ACEs, we know there is increased likelihood of becoming a victim, becoming violent, becoming involved with hard drugs and excess alcohol and ending up in prison'[3]. As a result of this emerging research, a new method of working has emerged. This is referred to as: trauma informed practice. Trauma informed practice has been adopted across many organisations that work with young people. For example, Child and Adolescent Mental Health Services (CAMHS) and the Youth Justice Board (YJB)[4] are advocating for practitioners to become competent in trauma informed care, and tailor interventions based on young people's prior ACE's and traumatic experiences. These cover areas such as: living in care, parents with alcohol or drug dependency, domestic and physical abuse, sexual abuse.

2 *Serious youth violence (SYV) - defined by the Youth Justice Board (YJB) as 'any drug, robbery or violence against the person offence that has a gravity score of five of more' - is a growing concern in England and Wales.*

3 *Home Office (2018) op. cit. p61*

4 *yjresourcehub.uk/wider-research/item/495-trauma-informed-youth-justice-briefing-2017.htmlbriefing-2017.html*

The boxing community has demonstrated some success by engaging with this trauma informed approach, and projects such Empire Fighting Chance (EFC) in Bristol are reporting emerging findings. Their 2019 report[5] discusses how 'Boxing Therapy' helps young people who have experienced trauma access a qualified therapist who will work alongside the boxing activity to "help them manage their emotions and negative ways of behaving", yet their report only uses participant case studies to highlight this, rather than provide credible evidence of the programme's effect.

Shape Your Life in Toronto, Canada is a government funded boxing gym that also uses trauma-informed approaches with young people and adults who have experienced violence[6], their work uses non-contact boxing alongside therapeutic interventions not dissimilar to EFC above, yet Shape Your Life is female only. The Fight with Insight Programme based in South Africa, also uses trauma informed approaches alongside boxing to work with young people who have experienced and perpetrated sexual offences (Draper et al 2013).

Boxing is offered as an alternative treatment in the Fight with Insight (FWI) programme. FWI is implemented by trained facilitators and boxing coaches, and has two complementary components that run back-to-back within the same day (participants attend a boxing session and then move on to a cognitive-behavioural group therapy (CBT) session. Those who complete the full 12 weeks are then able to join the Box Office Boxing Gym programme (in Johannesburg's southern suburbs). Support groups are also offered for parents of FWI participants. The content and mechanisms of the CBT and boxing sessions are included in the table opposite, and these are integrated into the boxing sessions.

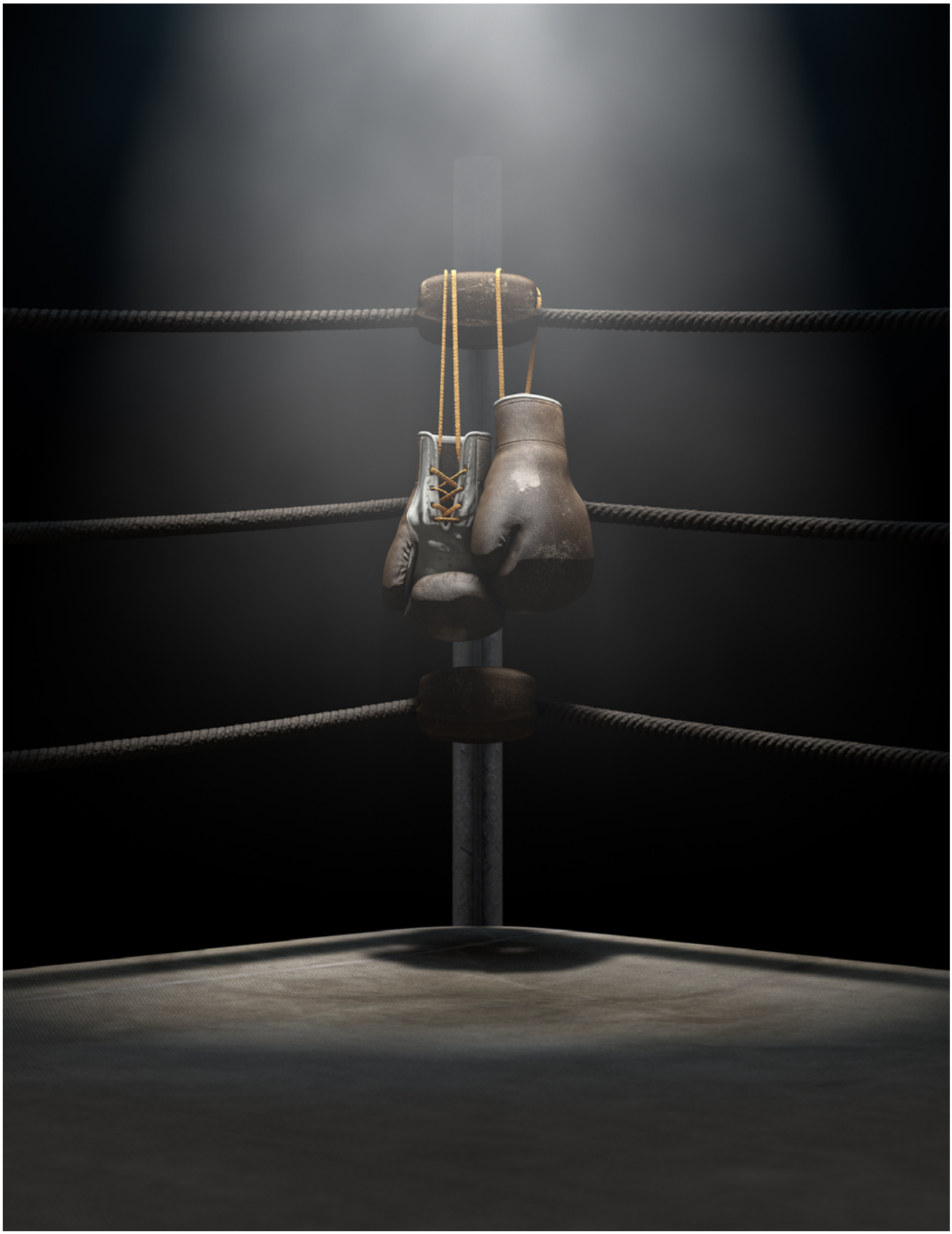
Unlike the majority of research on the societal effects of boxing, in evaluating FWI, Draper et al. (2013) make use of a comparator group, but do not quantitatively measure the therapeutic benefits of sport. However, their qualitative analysis seems to support the use of CBT, combined with an alternative treatment, in this case boxing, to bring about personal and social development. Appropriately, Draper et al. (2013) do however, err on the side of caution, when suggesting direct causality to the recidivism rates of those participating in FWI. However, considering questions about the reliability of the reduction in recidivism as a measure of programme effectiveness, as well as the lack of data in South Africa on recidivism (which could be used as a comparative measure) and the inaccuracy of South African statistics on sexual offences committed by juveniles (Stout, 2003), such an assessment may have limited value in this case.

The findings of this evaluation may therefore be less significant for those trying to establish 'what works' for youth sexual offenders, and more significant for practitioners who are interested in understanding how sport can be used in the rehabilitation of young sexual offenders. The conceptual model presented earlier helps to highlight that boxing on its own is not a sufficient condition for effectiveness, although the programme has never claimed it is. Rather, it is the interplay between the physical nature of the boxing, the four principles that are emphasized by the boxing coach, and the themes addressed within the CBT that contributes to programme effectiveness, and these could all be regarded as necessary conditions (Coalter, 2007) for personal and social development. Their combination helps to develop the skills required by participants to bring about sustainable and meaningful change in their lives, particularly as they learn to apply these skills outside the context of the diversion programme and their offending behaviour.

This aligns with Sandford et al's assertion that "it is not necessarily the specific nature or physical goals of a programme that are most significant, but the learning processes inherent in them. The real benefits for young people, therefore, lie in the accumulation of skills that will provide them with social currency in a much wider range of situations (Sandford et al., 2006 in Draper et al 2013)."

5 *empirefightingchance.org/wp-content/uploads/2020/04/EFC-5113_IMPACT-REPORT-12.19_AW2-WEB.pdf*

6 *shapeyourlifeboxing.com*



8. Conclusions

There is no conclusive evidence that boxing has any positive societal effects. The vast majority of research into boxing has been qualitative, which by design provides subjective and in-depth accounts of boxing with external validity. However, quantitative research, which provides objective internally valid and generalisable data, is needed to establish credible evidence of the positive societal effects of boxing. Some quantitative research has been undertaken to measure the societal effects of boxing (Nevill & Van Poortvliet, 2911; Ecorys, 2012; Sampson, 2015), but this research has failed to provide credible evidence for reduction in criminal activities and education improvement because of small sample sizes with low statistical power and absence of or unequal control groups. Notably, none of this research has been published, which would have required it to go through the quality control process of peer review. In contrast, there is growing credible evidence of the negative neurological consequences of boxing participation, including an RCT, which is the gold standard for establishing credible effects.

A previous report by the All -Party Parliamentary Group for Boxing (2015), opened with the passage:

> *If you visit almost any boxing club, you will probably not be able to leave without hearing an extraordinary story about how a young man (or woman) came to the club at a time when their life was falling apart, when all the problems that governments try so hard to solve were destroying their future: violence, drugs, crime, abuse, a chaotic family, depression, unemployment and truancy. Then you will hear that boxing changed all that. (p. 5)*

Similarly, England Boxing commissioned research by Barrett et al. (2020) undertook research evaluating the impact of boxing clubs on their host communities, as per the title of the report. In measuring impact, the research team argued that "the most valuable data resource was the ability of coaches to tell their stories in an open and honest way. Indeed, this is a valued tradition within boxing, where protagonists routinely share oral histories in the celebration and promotion of the sport" (p. 6).

Herein lies the problem for the advocates of boxing. Evidence for the positive societal effects of boxing is anecdotal; it is based upon personal accounts and stories, whereas evidence for the negative societal effects of boxing is based upon rigorous experimental designs that meet the highest standards of causal inference. In other words, the advocates of boxing are engaging in a fight with boxing's critics with one arm tied behind their back, usually relying on hominem statements regarding how 'boxing saved them from lives of crime'. It would serve the boxing community more if it would drop its guard slightly, and consider not only the positive stories that coaches and members relay, but the potential damaging effects also. As discussed in the previous chapter, evidence suggests that these damaging effects are predominantly health related (head trauma), and that there is a real lack of evidence for any other negative effects boxing may have. Accordingly, it would be wise to conduct further research into this area, not to search for negative effects, but to really put boxing through its paces, and demonstrate its effects both positive and negative in a rigorous evidence-based study.

9. Recommendations

It is recommended that a mixed-methods programme of research be undertaken that combines both rigorous experimental designs to measure the societal effects of boxing and ethnography so to richly understand the experiences through which any societal effects are achieved. For example, an ongoing study of the Boxing Academy by Hills and Walker is undertaking a study that overcomes the limitations of the Ecorys (2012) research. So to ensure a sample size with sufficient statistical to detect effect, data is being collected from multiple cohorts over the period of 2017 to 2022, which is anticipated to yield a sample of 130. The outcome of interest is GCSE examination results, which is objectively measured via a validated examination process. So to establish effect via comparison of the Boxing Academy with a meaningful counterfactual a matching design is being adopted that identifies a control group participant for each Boxing Academy participant matched on the basis of AP type (i.e., other AP Free Schools, rather than PRUs), exclusion type, reason for exclusion, gender, free school meal eligibility, special education needs, ethnicity, looked after status and prior examinations performance. These factors have previously been established as predictors of disadvantage and academic performance in the academic literature, thus represent potential confounding variables. Data on these control variables is available from the National Pupil Database and includes data on every pupil attending AP Free Schools in the United Kingdom, thus providing a large pool of potential control group participants, which should yield a control group that closely matches the Boxing Academy participants.

Holding these variables constant between Boxing Academy pupils and pupils at other AP Free Schools over the same period of time will limit omitted variable bias so to establish an internally valid estimate of the effect of the Boxing Academy on academic achievement. Qualitative research, including observations, interviews and focus groups with pupils and staff will seek to explain effect (or lack of) to provide a comprehensive picture of the effect of the Boxing Academy on academic attainment of pupils excluded from mainstream education.

It was previously recommended by the All-Party Parliamentary Group for Boxing (2015) that England Boxing should work with partners to find the most effective mechanisms for the most 'frictionless' data-gathering and then actively work with clubs to support them in using data-gathering systems and work towards organising a central repository for this data, for use in assessing the impact of the sport as a whole, and of individual clubs, but what data, what outcomes, what research design and what programmes?

The greatest opportunity to make a case for boxing does not lie in research of generalised claims of societal effects from boxing per se, but rather in research of well-designed programmes that are using boxing as part of a broader theory of change with which to achieve theoretically realistic outcomes (Hills, Walker and Dixon, 2019). In other words, programmes not based upon romanticised notions of the inherent value of boxing, fuelled by anecdotal evidence, but programmes with sound theories of change, leveraging boxing in meaningful ways, so to maximise the potential of finding positive societal effects. Each programme will be unique in terms of objectives and scope, thus warranting a unique research design to understand its effects.

The authors of this report are seeking partners from the boxing community to scope out and propose research projects on the themes covered in this literature review, so to develop a long-term research agenda on boxing and its societal effects. Boxing-based programmes will be grouped into themes (e.g. boxing and crime, boxing and mental and so forth) with a research project designed by the authors of this report, from which large-scale funding shall be pursued from funding bodies, such as the Economic and Social Research Council, part of UK Research and Innovation.

10. References

All- Party Parliamentary Group for Boxing (2015). *Boxing: The Right Hook*

Anderson, E (2009). *Inclusive Masculinity: The Changing Nature of Masculinity*, New York, Routledge

Audit Commission (2009). *Tired of Hanging Around: Using Sport and Leisure Activities to Prevent Anti-Social Behaviour by Young People*, London: Audit Commission

Baird, L. C., Newman, C. B., Volk, H., Svinth, J. R., Conklin, J., & Levy, M. L. (2010). Mortality resulting from head injury in professional boxing: case report. *Neurosurgery*, 67(2), E519-E520.

Barrett, D., Edmondson, L., Millar, R. & Storey, R. (2020). *Evaluating the Impact of Boxing Clubs on their Host Communities*. Sheffield Hallam University Sport Industry Research Centre. England Boxing.

Burtless, G. (1995). The case for randomized field trials in economic and policy research. *Journal of economic perspectives*, 9(2), 63-84.

Case, A. S., & Christophe, N. K. (2019). Strategies for improving self-efficacy: A qualitative analysis of Detroit's downtown boxing gym. *Journal of Youth Development*, 14(1), 165-181.

Coalter, F. (2007). *A Wider Social Role for Sport: Who's Keeping the Score?* Oxford: Routledge

Cryer, J. (2005). *Ruff Guide to Sport and Youth Crime*, Sports Development, (Accessed 10 May 2020), www.sportdevelopment.info/index.php/component/content/article/53-rgcrime

Deuchar, R., Søgaard, T. F., Kolind, T., Thylstrup, B., & Wells, L. (2016). 'When you're boxing you don't think so much': pugilism, transitional masculinities and criminal desistance among young Danish gang members. *Journal of Youth Studies*, 19(6), 725-742.

Di Virgilio, T. G., Ietswaart, M., Wilson, L., Donaldson, D. I., & Hunter, A. M. (2019). Understanding the consequences of Repetitive Subconcussive Head Impacts in Sport: Brain changes and dampened motor control are seen after boxing practice. *Frontiers in human neuroscience*, 13, 294.

Dortants, M., & Knoppers, A. (2013). Regulation of diversity through discipline: Practices of inclusion and exclusion in boxing. *International Review for the Sociology of Sport*, 48(5), 535-549.

Draper, C. E., Errington, S., Omar, S., & Makhita, S. (2013). The therapeutic benefits of sport in the rehabilitation of young sexual offenders: A qualitative evaluation of the Fight with Insight programme. *Psychology of Sport and Exercise*, 14(4), 519-530.

Ecorys (2012). Sport scores: The costs and benefits of sport for crime reduction. Laureus Sport for Good Foundation.

Edreson, I.M. & Olweus, D. (2005). Participation in Power Sports and Antisocial Involvement in Preadolescent and Adolescent Boys, *Journal of Child Psychology and Psychiatry* 46(5), 468-478.

Ferguson, K., Hassan, D., & Kitchin, P. (2018). Sport and underachievement among protestant youth in Northern Ireland: a boxing club case study. *International Journal of Sport Policy and Politics*, 10(3), 579-596.

Forbes, G., Adams-Curtis, L., Pakalka, A., & White, K. (2006). Dating aggression, sexual coercion, and aggression-supporting attitudes among college men as a function of participation in aggressive high school sports. *Violence Against Women*, 12(5), 441–455

Gordon, B., & Doyle, S. (2015). Teaching personal and social responsibility and transfer of learning: Opportunities and challenges for teachers and coaches. *Journal of Teaching in Physical Education*, 34(1), 152-161.

Graham, M. R., Myers, T., Evans, P., Davies, B., Cooper, S. M., Bhattacharya, K., ... & Baker, J. S. (2011). Direct hits to the head during amateur boxing is associated with a rise in serum biomarkers for brain injury. *International journal of immunopathology and pharmacology*, 24(1), 119-125.

Hakim, C. (2000). Research design: *Successful designs for social and economic research.* Psychology Press.

Heckman, J. J., & Smith, J. A. (1995). Assessing the case for social experiments. *Journal of economic perspectives*, 9(2), 85-110.

Hemphill, M. A., Gordon, B., & Wright, P. M. (2019). Sports as a passport to success: life skill integration in a positive youth development program. *Physical Education and Sport Pedagogy*, 24(4), 390-401.

Hills, S. & Walker, M. (2016). *The Role of Boxing in Development: A Social Marketing Perspective*. Walker Research Group. England Boxing.

Hills, S., Walker, M., & Dixon, M. (2019). The importance of theorizing social change in sport for development: A case study of Magic Bus in London. *Journal of Sport Management*, 33(5), 415-425.

Hirschi, T. (1969). *Causes of Delinquency*, Berkeley, CA: University of California Press

Holton III, E. F., & Baldwin, T. T. (2003). *Improving learning transfer in organizations*. John Wiley & Sons.

Jacobs, J. M., & Wright, P. M. (2018). Transfer of life skills in sport-based youth development programs: A conceptual framework bridging learning to application. *Quest*, 70(1), 81-99.

Jenkins, C., & Ellis, T. (2011). The highway to hooliganism? An evaluation of the impact of combat sport participation on individual criminality. *International Journal of Police Science & Management*, 13(2), 117-131.

Jump, D. (2017). Why we should think some more. A response to 'When you're boxing you don't think so much': pugilism, transitional masculinities and criminal desistance among young Danish gang members. *Journal of youth studies*, 20(8), 1093-1107.

Jump, D. (2020). *The Criminology of Boxing, Violence and Desistance*. Policy Press.

Jump, D., & Smithson, H. (2020). Dropping your guard: The use of boxing as a means of forming desistance narratives amongst young people in the criminal justice system. *The International Journal of Sport and Society*, 11(2), 56-69.

Lerner, R. M., Wang, J., Hershberg, R. M., Buckingham, M. H., Harris, E. M., Tirrell, J. M., ... & Lerner, J. V. (2017). Positive youth development among minority youth: A relational developmental systems model. In *Handbook on positive development of minority children and youth* (pp. 5-17). Springer, Cham.

Loosemore, M., Knowles, C. H., & Whyte, G. P. (2007). Amateur boxing and risk of chronic traumatic brain injury: systematic review of observational studies. *Bmj*, 335(7624), 809.

Meo, A., & Parker, A. (2004). Teachers, teaching and educational exclusion: Pupil Referral Units and pedagogic practice. *International Journal of Inclusive Education*, 8(1), 103-120.

Moreau, N., Thibault Lévesque, J., Molgat, M., Jaimes, A., Parlavecchio, L., Chanteau, O., & Plante, C. (2018). Opening the black box of a sports-based programme for vulnerable youth: The crucial role of social bonds. *Qualitative research in sport, exercise and health*, 10(3), 291-305.

Morris, J. T. (1996). Excluded pupils—the mismatch between the problem and solutions. *Emotional and Behavioural Difficulties*, 1(2), 35-38.

Neselius, S., Zetterberg, H., Blennow, K., Marcusson, J., & Brisby, H. (2013). Increased CSF levels of phosphorylated neurofilament heavy protein following bout in amateur boxers. *PloS one*, 8(11), e81249.

Nevill, C., & Van Poortvliet, M. (2011). Teenage kicks: The value of sport in tackling youth crime. *London: New Philanthropy Capital for Laureus Sport for Good Foundation*.

Sacha, J. O. (2017). Fighting Feelings: The Emotional Labor of "Old Heads" in an Amateur Boxing Gym. *Sociological Perspectives*, 60(1), 77-94.

Sampson, A. (2015). From NEET to ETE: An evaluation of the longer- term outcomes of the Pathways programme at Fight for Peace, UK.

Sandford, R. A., Armour, K. M., & Warmington, P. C. (2006). Re-engaging disaffected youth through physical activity programmes. *British educational research journal*, 32(2), 251-271.

Scandurra, G. (2015). The ring and the street: young immigrant boxers in the Bolognina neighbourhood of Bologna. *Modern Italy*, 20(3), 251-261.

Smith, M. S. (2006). Physiological profile of senior and junior England international amateur boxers. *Journal of sports science & medicine*, 5(CSSI), 74.

Søgaard, T.F., Kolind, T., Thylstrup, B., Deuchar, R. (2016). Desistance and the micro narrative construction of reformed masculinities in a Danish rehabilitation Centre. *Criminology and Criminal Justice*, 16(1), 99-118.

Stout, B. (2003). Applying effective practice principles to work with child sex offenders in South Africa. Acta *Criminologica: African Journal of Criminology & Victimology*, 16(1), 14-20.

Trimbur, L. (2009). "Me and the law is not friends": how former prisoners make sense of reentry. *Qualitative Sociology*, 32(3), 259-277.

Wacquant, L (2004) *Body and Soul: Notebooks of an Apprentice Boxer*, New York: Oxford University Press.

Walpole, C,. Mason, C,. Case, & S. Downward, P. (2018). *Safer Together: Creating Partnerships for Positive Change*, Streetgames and Loughborough University report.

Woodward, K. (2008). Hanging out and Hanging About: Insider/Outsider Research in the Sport of Boxing. *Ethnography*, 9, 536-560.

Wright, W. (2006). Keep it in the ring: Using boxing in social group work with high-risk and offender youth to reduce violence. *Social Work with Groups*, 29(2-3), 149-174.

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