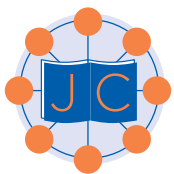


In this article...

- Previous research into boxing and its impacts on mental and physical health
- How a nurse-led boxing intervention was delivered and evaluated for inpatients
- The intervention's benefits identified by service users and staff members

A boxing intervention on inpatient mental health wards



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Key points

Boxing has proven benefits for physical and mental health

A boxing intervention was delivered in an inpatient mental health setting

Staff and service users reported that boxing reduced service users' anger and stress

Other benefits included improved physical health, increased activity, psychological relief and re-engagement with activity

Both groups highlighted the need for increased access and privacy to improve the intervention

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Abstract Boxing is an interactive sport with many therapeutic benefits for both physical and mental health. A boxing intervention was delivered by nurses in an inpatient mental health service, and a survey was developed to identify its effects. Both staff and service users overwhelmingly endorsed boxing as an effective intervention for reducing anger and stress. The two groups also endorsed boxing as an effective means of controlling impulses and aggression, although staff did so to a greater extent than service users. Overall, boxing interventions may be helpful for inpatients experiencing a range of difficulties.

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Boxing is a combat sport that involves throwing punches using padded gloves. This article discusses a study that investigated the benefits of nurse-delivered boxing activities in inpatient mental health settings.

Literature review

There is emerging evidence that boxing may be helpful in treating mental health problems, such as anxiety and depression. Harrison and Tudor (2020) found that physical exercise – in the form of boxing – reduced participants' depression scores. Other research has identified that boxing improves self-esteem, concentration and "self-agency" (Bozdarov et al, 2022), and reduces aggression (Szabo and Urbán, 2014) and anxiety (Bozdarov et al, 2022).

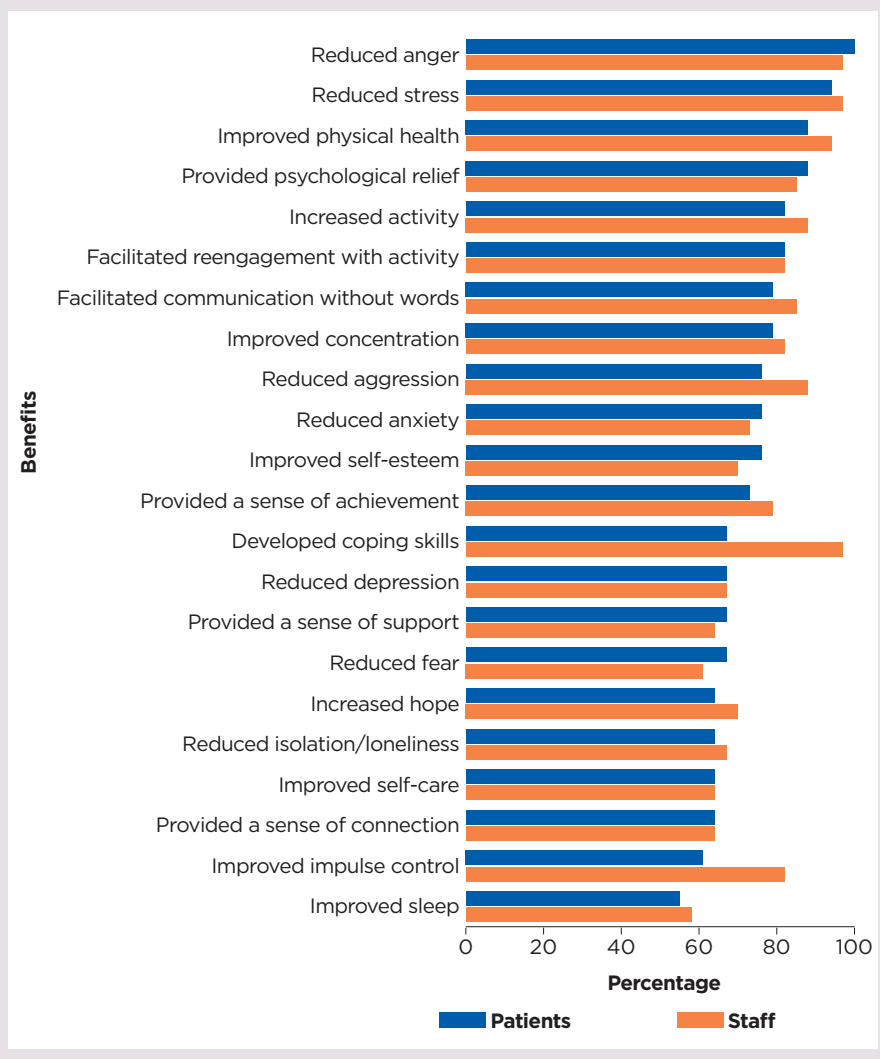
Woodhead et al (2019) highlighted boxing as a useful strategy for managing aggression and stress; both are difficulties commonly observed in service users on inpatient mental health wards (Weltens et al, 2021). Empirical research provides some

indications of why this might be. For example, a study by Gallenberg (2019) found that men endorsed boxing as an activity that did not compromise their perceived threat to masculinity, and separate research identified that boxing allowed men to express aggression and uphold status within their network (Deuchar et al, 2016). There is also evidence that boxing reduces fear of revictimisation in women who have experienced sexual trauma (Cole, 2015), and it can help improve the perceived physical ability of women who have survived gender-based violence (Gammage et al, 2022).

In a retrospective study of psychiatric inpatients, Bohle and de Vogel (2017) found that 68% had experienced victimisation during childhood and 37% during adulthood. Additionally, a review of 194 male forensic inpatients by McKenna et al (2019) identified that 100% had experienced a trauma at some point. There are several reasons why boxing may enhance emotion regulation in people who have experienced



Fig 1. Staff and patients' agreement with the intervention's impacts on patients



trauma. Boxing enhances proprioception (one's sense of position and orientation) (Fullin et al, 2021). Proprioceptive feedback from receptors in the musculoskeletal system are involved in the body registering when traumatic events have ended and in activation of the parasympathetic nervous system (Payne et al, 2015). Traumatic experience interferes with this process, contributing to the states of prolonged hyperarousal, often observed in people who have experienced trauma (Williamson et al, 2015). Activities that enhance coordination and involve the application of deep pressure on the skin, such as boxing, help activate the parasympathetic nervous system and restore its normal function (Reynolds et al, 2015).

Although physical contact and deep pressure on the skin are known to be important in trauma recovery (Reynolds et al, 2015), in mental health care, use of physical

touch often conflicts with concerns about professionalism, boundary violations and abuse (Cleary and Hungerford, 2021). Boxing provides a context in which therapeutic contact can occur without fears of crossing healthy boundaries.

The research findings summarised in this literature review were generated through non-clinical samples. To our knowledge, research has not previously explored the use of boxing as an intervention in inpatient mental health settings; a study by Price et al (2023) generated the idea but did not execute it due to implementation concerns. There is, therefore, an absence of feedback from service users and health professionals in such settings about the potential therapeutic benefits of boxing.

Method

The aim of our study was to explore the benefits and disbenefits of nurse-delivered

boxing interventions on inpatient mental health wards, from the perspective of staff and service users.

It was conducted in Royal Bolton Hospital, which has two acute wards and one psychiatric intensive care unit, serving 52 male and female service users. A nurse talked to each patient about their needs and interests, then offered two different boxing styles:

- Punchbag work (punching a contained target), which could be completed alone or supervised by a member of nursing staff;
- Pad work drills (using a combination of different sequences targeted into boxing pads), which was delivered by a member of the nursing staff.

Service users could engage in one, both or neither of these styles; they were required to undertake a physical health assessment before engaging with either. Each member of nursing staff either supervised or participated in one of the styles, and they were also encouraged to support service users with grounding exercises pre- and post-boxing to reduce the potential for hyperarousal. The intervention consisted of up to 10 sessions, over an eight-month period. In total, 33 service users took part.

To assess service users' and staff members' opinions about the intervention, we developed a survey; this was informed by the above literature review and reviewed by the inpatient psychology team for validity, readability and clarity. The surveys were distributed across the three mental health inpatient wards between February and October 2020. Service users and staff were given a choice of whether to return them, and all responses remained anonymous.

The survey collected demographic information including age and gender, and respondents were asked to report how many times they had accessed the boxing intervention. The survey also asked service users and staff to provide yes/no answers, first indicating whether they felt the boxing intervention was helpful to service users overall, and in response to 22 physical and psychological effects derived from the literature review (Fig 1). They were then asked open-ended questions about any additional perceived benefits and drawbacks; finally, they were asked to share any ideas to improve the intervention.

Results

Quantitative findings

In total, 66 surveys were completed, 33 by service users and 33 by staff. Of the service users who completed surveys, 61% were

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male and 39% were female, all aged 18-66. Of these service users, 76% engaged in both boxing styles, 16% engaged in pad work drills only and 8% used the punchbag only.

Staff members who completed surveys included healthcare assistants, nurses, physiotherapists, occupational therapists, psychologists and ward managers; 61% of these staff members had either supervised or participated in the boxing intervention.

All service users and all staff who took part in the survey identified boxing as a helpful intervention. Fig 1 shows their levels of agreement with the range of benefits identified in previous research. Both service users and staff reported boxing interventions to be most helpful for reducing anger and stress ($\geq 94\%$ agreement) and, in both groups, the fewest participants reported that they were helpful for improving sleep ($\leq 58\%$ agreement).

Both groups had an agreement rate of $\geq 80\%$ with the suggestions that boxing interventions improved physical health, increased activity, provided psychological relief and helped reengagement with activity. Staff responded with the same level of agreement ($\geq 80\%$) that boxing interventions reduced aggression, facilitated communication without words, and improved concentration and impulse control; however, the scores for these benefits were lower among patients (61-79%).

Qualitative findings

In response to the free-text questions, 61% of service users and 27% of staff provided additional qualitative comments. We reviewed and grouped these into the following themes, which are discussed below:

- Improvements to physical health, activity, confidence and self-perception;
- Emotion and self-regulation;
- The need for more resources;
- Adaptations to the environment;
- Increased accessibility.

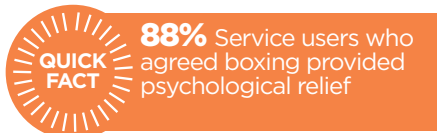
Improvements to physical health, activity, confidence and self-perception

Service users described changes to their physical appearance as a result of engaging in the intervention. They reported noticeable weight loss and increased strength, which, for some, were linked directly to improved self-esteem. Both service users and staff also discussed service users' improved motivation and engagement with physical activity as a result of the intervention:

"It has helped me feel more motivated and better about myself, because I'm doing something about my health and weight." (Service user)

One service user said that participating in boxing "helped with boredom and thoughts". Several also reported improved confidence and self-esteem, including where physical health problems restricted other forms of activity:

"It has helped to increase my sense of self-worth by engaging in boxing when other exercise is limited due to physical pain." (Service user)



Emotion and self-regulation

Service users described how boxing had been beneficial emotionally. Some said it helped them manage overwhelming feelings of stress and anger. Both service users and staff commented that engagement with the intervention reduced violent or aggressive behaviour; some perceived this to be because boxing provides a clear focus and a physical target to express emotions safely, thereby providing a cathartic experience:

"I found boxing helped to reduce stress, anger and frustration, by taking the edge off before it built up and exploded in an unhealthy way, such as damaging property [or] smashing up furniture." (Service user)

One member of staff shared a concern that boxing could increase hostility, although they clarified that they had not observed this. However, this concern was not reported by anyone else who completed the evaluation, and the results indicated a perspective that boxing is helpful in reducing hostility.

The need for more resources

Responses indicated that the intervention could be improved through increased staff participation and resources. Staff members reported that limited staffing, equipment and staff training were potential barriers to increasing staff engagement:

"It could be improved if we had more equipment and more people to deliver the sessions, and we could have fixed group work." (Nurse)
"It'd help to train more staff in being confident to facilitate punchbag or pad work." (Nurse)

Adaptations to the environment

Service users emphasised the need for an "appealing room" that has "space for movement and temperature control" and is "separate" from communal spaces on the ward.

Several staff and service users expressed a need for the room to be made private:

"Put a screen on the window for privacy." (Service user)
"Make the room more private, for example, [using] frosted glass." (Nurse)

The findings suggested that a private space could enhance the boxing experience and its benefits.

Increased accessibility

Responses indicated that the intervention could be improved if the sessions were longer and more frequent. Staff reported that it could be helpful for boxing interventions to form part of ward routine as a structured activity.

One staff member expressed a lack of awareness of how and when service users could access boxing; this indicated a need to improve patient access via increased staff awareness and training. One service user recommended that patients should be able to engage with boxing when required, as opposed to waiting for scheduled sessions:

"It would be more helpful to allow a pair of boxing gloves/mitts on the wards supervised by staff." (Service user)

Discussion

In their survey responses, both service users and staff overwhelmingly endorsed boxing as an effective way of reducing stress and anger in this group of inpatient participants. An interpretation of this is that boxing is a stimulating, fulfilling activity that distracts participants from thoughts that potentially perpetuate mental health problems. It is possible that the perceived effects of the intervention are the result of the following emotion-regulation mechanisms identified in previous research:

- Parasympathetic activation via deep pressure on the skin (Reynolds et al, 2015) and enhanced proprioceptive feedback (Fullin et al, 2021);
- The remoulding of identity through engaging in a combative activity (Gammage et al, 2022; Cole, 2015).

Further in-depth qualitative inquiry and rigorous mixed-methods studies incorporating laboratory investigations are needed to confirm the mechanisms and outcomes of boxing interventions in clinical populations.

It was notable that staff respondents identified outcomes related to behaviour regulation (such as aggression and impulse control) to a greater extent than service users did. This finding is

important for future implementation studies, because it demonstrates that staff may endorse behaviour-regulation strategies that service users do not find meaningful, which could lead to ineffective interventions.

Price et al's (2023) prior attempt to implement boxing as a form of exercise in adult inpatient mental health settings was hampered by professional concerns about exercise causing hyperarousal and reinforcing violent actions for the purpose of emotion regulation. This was mirrored in the survey response we received from a staff member who was concerned that boxing could increase hostility. It highlights a possible preconception of boxing as an aggressive sport, as well as potential stigma and stereotyping attached to people who box. However, our study suggests that, once staff have engaged in boxing activities, any such concerns fail to materialise and, furthermore, they go on to develop a firmer belief than service users that boxing activities help to reduce rather than increase aggression.

Both staff and service users suggested ways in which the delivery of boxing interventions can be improved. Both groups highlighted the need for privacy when engaging in the activity and greater accessibility via an increased number of nursing staff who are trained to supervise. The large number of suggestions to have a separate, private space indicated similarities between this type of intervention and talking interventions, which are often set up in a way that ensures safety and confidentiality.

Overall, this study supports the use of boxing as a form of exercise in inpatient mental health settings and locked ward environments, for people who may not have access to gyms or be able to leave the ward. It requires a low-resource output, and no respondents reported any safety concerns that materialised in practice.

Additionally, in our experience, the use of boxing can encourage nursing staff and service users to build therapeutic relationships and feel connected through interactions that are less clinical and more 'normal'. Pad work drills require a level of trust, as one is inviting others to punch in their direction; this would be difficult to replicate with other interventions.

Box 1 lists our implications for practice.

Limitations

Owing to ethical limitations as a service evaluation, we did not collect data on diagnosis. Future research could explore the

Box 1. Implications for practice

- Boxing should be considered as an alternative form of exercise in settings for patients who may not have access to other forms of activity
- Boxing in inpatient mental health settings is perceived as helpful in reducing service users' anger and stress
- Staff concerns over safety may be reversed via exposure to boxing activities and their therapeutic effects
- Efforts to implement interventions should focus on:
 - Reaching a critical mass of trained nursing staff to maximise access
 - Ensuring privacy for service users in the space where boxing takes place

usefulness of boxing for service users with specific needs and diagnoses.

Collecting data via a survey also has some restrictions, such as limited responses and social desirability bias. Although there was space for people to provide qualitative feedback, the responses received were rather thin, and most respondents did not provide detailed, descriptive answers. More in-depth qualitative inquiry would be helpful to understand implementation barriers and mechanisms of effect.

We did not compare pre- and post-intervention questionnaires or use a standardised measure to evaluate boxing interventions. Finally, the survey did not distinguish between the impact of different boxing styles; therefore, it was difficult to establish which type was the most beneficial for specific outcomes.

Conclusion

This evaluation investigated staff and service user perspectives on the relationship between boxing activity and service users' emotional and physical wellbeing on inpatient mental health wards. Both groups overwhelmingly agreed that boxing activity was helpful in reducing anger and stress. Although both reported its benefits for behaviour regulation, staff agreed with these outcomes to a greater extent than service users. This was an unexpected but important finding, because a previous study that attempted to implement boxing in inpatient mental health settings was impeded by staff concerns over increased violence. However, our findings indicated that staff exposure to service users' boxing activity in practice may reduce concerns

over safety. Future evaluations should focus on increasing accessibility to boxing by training more staff members and improving the privacy of the environment in which boxing takes place. **NT**

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