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CASE STUDIES
STUDII DE CAZ

Depression or addiction in athletic training - a case study
Depresie sau adicţie în antrenamentul sportiv - studiu de caz

Marinela Minodora Manea[1], Traian Bocu[2], Doina Cosman[3]
[1, 3]Clinical Psychology Department, Iuliu Haţieganu University of Medicine and Pharmacy Cluj-Napoca
Emergency Clinical Hospital, Cluj-Napoca
[2]Physical Education and Sport, Iuliu Haţieganu University of Medicine and Pharmacy, Cluj-Napoca

Abstract

Background. Although numerous studies underline the fact that sport helps reducing depressive symptoms, there are many different points of view. Beginning from 1976, specialized literature has emphasized the risks of positive addictions like sports, sexual intercourse and shopping. No screening method for exercise addiction has been developed yet, but first steps in this direction have been taken in the case of football and athletic races. Case studies show suggestive examples demonstrating that soon, there might be sufficient criteria to support the diagnosis of new psychiatric disorders such as ”exercise addiction”.

Aims. A specific purpose of this study was the assessment of reciprocity between psychiatric disorder and performance in football. The general objective was to distinguish predisposing factors for suicidal behavior in this specific case. A secondary objective was refining the diagnosis of the teenager using the new edition of the Diagnostic and Statistical Manual of Mental Disorders DSM-V.

Methods. Psychopathological parameters associated with the deterioration of athletic performance and the onset of suicidal behavior in the 19-year old football player of the ”U-Cluj – Junior team” were analyzed using the Qualitative Method. The semi-structured interviews used for psychiatric diagnosis were: the Mini-International Neuropsychiatric Interview (M.I.N.I.) and the Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II). Clinical scales were: the Temperament and Character Inventory (TCI) developed by Cloninger et al., the Beck Hopelessness Scale, the Life Events Scale by Holmes and Rahe, for the evaluation of the stress accumulated in the year preceding the suicide attempt. The case was evaluated in two distinct moments of time: in 2006, during psychiatric care after attempted suicide, and in 2013.

Results. Athletic performance declined significantly, resulting in total abandon of all implications in football. The results of this case study analysis led to the refinement of the diagnosis in compliance with the new classifications of DSM-V: the diagnosis of dysthymia was completed by the specification “anxious distress”. The diagnosis of exercise addiction was presumably present in 2006. This diagnostic presumption requires further discussions in light of suicidal vulnerability in the studied case.

Conclusions. Dysthymia has a negative impact on athletic performance. Dysthymia as a comorbidity in exercise addiction leads to an increase in suicidal risk.

Key words: football, dysthymia, comorbidity, exercise addiction, suicidal risk, diagnostic specifiers.

Rezumat

Premize. Numeroase studii susţin că sportul ajută la reducerea simptomelor depresive. Există însă şi puncte de vedere diferite. Literatura de specialitate, încă din anul 1976, atrage atenţia asupra adicţiilor cu valenţă pozitivă, precum sportul, sexul, shopping-ul. Nu sunt screening-uri pentru dependenţa de activitatea fizică, dar primele semnale pe această direcţie au fost în cazul alergării şi a fotbalului. Studiile de caz sunt mărturii grăitoare că în viitor s-ar putea să avem suficiente criterii pentru a susţine în psihiatrie existenţa unei alte tulburări psihiatrice, precum dependenţa de activitatea fizică.

Obiective. Obiectivul specific al studiului a fost de a evalua intercondiţionările dintre tulburarea psihiatrică şi performanţa în fotbal. Obiectivul general al studiului de caz este evidenţierea factorilor predispozanţi pentru comportamentul suicidar la un tânăr sportiv de 19 ani, diagnosticat cu distimie. Un obiectiv secundar a fost acela de a se rafina diagnosticul la caz, din perspectiva apariţiei noii ediţii a Manualului de Diagnostic şi Statistică a Tulburărilor Mentale DSM-V.

Metode. Cu ajutorul metodei calitative de analiză de caz s-au studiat parametrii psihopatologici implicaţi în deteriorarea performanţei sportive şi în declanşarea comportamentului suicidar, la un tânăr în vârstă de 19 ani, fotbalist în echipa “U Cluj - Juniori”. Interviurile semistructurate de diagnostic psihiatric folosite au fost: Interviul Structurat de Diagnostic Neuropsihiatric (M.I.N.I) şi Interviul Clinic Structurat pentru Tulburările de Personalitate de pe Axa II (SCID II). Scalele clinice folosite au fost: Inventarul de Temperament şi Caracter (TCI) alcătuit de Robert Cloninger, Scala disperării (Beck Hopelessness Scale), Scala evenimentelor de viaţă (Holmes şi Rahe) pentru a investiga nivelul de stres în anul anterior evenimentului suicidar. Cazul a fost analizat în două momente diferite de timp: în anul 2006, în timpul îngrijirilor medicale psihiatrice post-tentativă suicidară

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Address for correspondence: Iuliu Haţieganu University of Medicine and Pharmacy, Cluj Clinical Emergency County, Clinic Psychiatric III, Unit 3, No. 43, Victor Babes St., 400012 Cluj-Napoca
E-mail: minodora.manea@yahoo.com

prin spânzurare şi în anul 2013.

Rezultate. Performanţa sportivă la cazul studiat a avut grav de suferit, tânărul ajungând să abandoneze fotbalul. Rezultatul analizei de caz a condus la rafinarea diagnosticului actual, în lumina noilor clasificări din psihiatrie. Astfel, diagnosticul de distimie este completat cu specificantul anxietate tip distres. În ceea ce priveşte diagnosticul de dependenţă de sport, a fost prezent cu mare probabilitate în 2006 la caz. Această prezumţie diagnostică merită discutată din perspectiva vulnerabilităţii la sinucidere la cazul studiat.

Concluzii. Distimia are impact negativ asupra performanţei sportive. Distimia în comorbiditate cu dependenţa de sport conduce la creşterea riscului suicidar.

Cuvinte cheie: fotbal, distimie, comorbiditate, dependenţa de activitatea fizică, risc suicidar, specificanţi diagnostici.

Introduction

A specialized article published in 2009 in Scientific American (Ballantyne, 2009) revealed the findings of the US Public Health Service run by William Haskell of Stanford University on physical activities and physical exercise. The conclusion was that aerobic exercise helps reduce depressive symptoms. The study, conducted by Blumenthal et al. (1999), proved that 16 weeks of aerobic exercise were just as effective as 16 weeks of treatment with Zoloft for depression. All these proofs support the protective role of physical exercise on mental health, provided that this activity is characterized by control and moderation.

Nevertheless, a completely different point of view is also being promoted: since 1976, the specialized literature has been drawing attention to positive addictions (such as sport, sexual intercourse or shopping). This type of addiction was first described in top athletes (Glasser, 1985), the most popular standpoint being that excessive training is a form of addiction. Those who practice running, fitness or body-building excessively not only put themselves in physical danger, but they also consider training to be more important than family, health and career. Exercise addiction has not been screened until now, probably because it is difficult to apply available tools and the interpretation of the results based on score hierarchy is not always obvious (***, 2013).

Exercise addiction, as it was characterized, was subsumed to the category of addictions that do not involve the use of exogenous substances, next to food addiction, starving, shopping, sexual intercourse or gambling (Klein, 2004).

The characteristics of body-building and fitness addiction include: training more than five times a week, for at least a few hours; continuing training despite illnesses (in non-severe forms) or injuries; estrangement from family and society for the purpose of training more; feeling guilty for missing training sessions for objective reasons (Véléa, 2002; Valleur & Véléa, 2002; Mirescu et al., 2008).

The most important adverse effects of exercise addiction are: physical and mental damage reflected by symptoms such as anemia, immunodeficiency, menstrual disorders, irritability, anxiety, depression (Leuenberger, 2006; Albreicht et al., 2007). Over recent years, a growing interest in rudimentary, subclinical forms of depression such as dysthymia has been noted because of the decrease in daily functionality and vocational-professional performances caused by these mood disorders. Moreover, DSM-V [Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition] – published in 2013 – brings important clarifications mainly regarding the severity specifiers that may characterize the clinical presentation of dysthymia (***, 2013). These specifiers may precipitate highly severe psychopathological presentations such as suicide attempts (Martunnen, 1991; Cosman, 2006; Cosman, 2009).

General objective

The general objective of this case study is to highlight the predisposing factors of the suicidal behavior of a young 19-year-old athlete diagnosed with dysthymia.

Specific objectives

- Assessing the distinctive features of *persistent depressive disorder* such as intensity, duration, clinical presentation, symptoms, severity specifiers, comorbidity.
- Highlighting the *dimensional features of the personality* of this patient, who developed a highly severe form of suicidal behavior – suicide attempt by hanging.
- Assessing the correlation between the values obtained for personality dimensions and *distress*.
- Assessing the impact of some interfering factors such as *life events* or *comorbidity* on this young athlete's predisposition to suicide.
- Investigating if *excessive training* or the *decrease in athletic performance* has an impact on the onset of depression and implicitly, on suicidal attempt.

Hypothesis

We assessed the *psychopathological parameters* that may have contributed to the onset of suicidal behavior in a 19-year-old teenager, student and football player for the junior "U" Cluj team, using the qualitative case study methodology in order to establish if dysthymia was the only factor explaining the suicide attempt of this young football player, whose training lasted several hours a day.

Material and methods

The study was approved by the Ethics Committee in accordance with the Good Practice Guide, by approval number 458A/28.11.2011. It complied with the conditions of the Helsinki Declaration, the Protocol of Amsterdam, Directive 86/609/EEC, and the "Iuliu Haţieganu" University of Medicine and Pharmacy Cluj-Napoca Bioethics Commission regulations.

Research protocol

Period and place of the research

The patient was assessed at two different stages: in 2006, during the psychiatric care received after his suicide attempt by hanging, and in 2013.

Subjects and groups

The case study presents the patient (D.S.B.), a 19-year-

old male student and football player, member of the "Universitatea" Cluj Sports Club, who was diagnosed with early-onset persistent depressive disorder (F.34.1). Suicide attempt by hanging (X.60) (***, 1992).

Tests applied

The objective evaluation of psychopathological syndromes and personality dimensions was performed using specific clinical tests.

The psychiatric case study was approached as follows:

1. The psychiatric diagnosis was made in compliance with the ICD-10 criteria, by the primary care psychiatrists who treated the patient during his hospitalization (***, 1992).

2. The screening for the categorical diagnosis of the patient with mood disorder was made in compliance with DSM-IV-TR, using the Structured Clinical Interview for DSM SCID II, an additional tool to the 2nd diagnosis Axis of DSM-IV-TR, which fully complies with the diagnosis criteria applied to personality disorders Cluster A, B and C (***, 2003; ***, 2013).

3. The assessment of the patient's suicidal behavior was conducted using specific scales.

4. The scales and assessment tools used were the following:

a) Structured Clinical Interview for DSM Axis 2 Personality Disorders (SCID II) (***, 2003)

b) Mini-International Neuropsychiatric Interview (M.I.N.I.)

c) Temperament and Character Inventory of Robert Cloninger et al. (Cloninger et al.,1994)

d) Beck Hopelessness Scale (Beck et al., 1974)

e) Holmes & Rahe stress scale

Statistical processing

The study case analysis was conducted using qualitative methods: psychiatric interview, semi-structured interview, life history, clinical scales. Some of these methods were repeated at two different stages of the assessment (Manea, 2010).

Results

Reasons for hospitalization

D.S.B., aged 19 years, freshman at the Faculty of Economic Sciences, without any noteworthy personal pathological history, was brought to the Emergency Room on December 24, 2006 (on Christmas Eve), at 07:00 p.m., after he attempted suicide by hanging. He was resuscitated effectively and in time and admitted to the Intensive Care Unit in a state of deep coma. The patient woke up after four days of respiratory and cardiovascular monitoring and was transferred to the Clinical Psychiatry Unit 3.

Living and work conditions

D.S.B. was a teenager issued from a good family. His father was a construction engineer and his mother, an economist. They were well off - his parents had their own business. D.S.B. had a younger sister, still in school. He lived with his extended family (including his paternal grandparents) in an 8-room mansion. He "still" played for the Universitatea Cluj junior football team, but he had been on the bench for one year because the coach had warned him on several occasions that he was no longer communicating as he should have been with the rest of the team during football games.

No hereditary, collateral or personal pathological history.

A day like any other?!

Given that it had been quite hard to work with the patient during the first days, it was the family who recounted the unfolding of the day of the suicide attempt to the medical staff. According to them, it seemed *a day like any other* and there were no hints that such a serious event was about to happen. In the morning, D.S.B. left with his father for the family store. On the way, D.S.B. insisted that they stopped at a store selling leather jackets. The boy told his father that he wanted a certain *leather jacket*, but his father refused to buy him the jacket, offering him nothing but a brief explanation. The consequences were dramatic: he returned home alone, he meticulously took off his coat and his belt and used the latter to hang himself from the staircase. His grandmother related that she was in the kitchen, preparing for Christmas, when he entered the house. He did not greet her. She heard the noise, which allowed her to save him by finding him immediately after his suicide attempt.

Case-related note

It was not the first time that his father noticed such discontentment. It had already occurred in the year preceding the suicide attempt, sometimes because of ordinary facts. However, the discontentment mostly had to do with the *football field*, training sessions or sport-related failures.

The teenager practiced two or three hours a day, five days a week. He felt that his effort was not going to pay off (Manea, 2010).

Diagnosis on discharge

Early-onset dysthymia (early-onset persistent depressive disorder) (F.34.1). Suicide attempt by hanging (X.60) (***, 1992).

Psychiatric assessment (anamnestic, hetero-anamnestic)

- Depressive mood, dysphoria during hospitalization and for approximately one year before. However, Stelian's family did not consider that he had a problem. They thought that this *state of mind* was caused by the lack of recognition of his value as a football player.

- The clinical observation and assessment highlighted: depressive mood, fatigability, low self-esteem and poor focus; there were no signs of distress or suicidal intention.

- The Mini-International Neuropsychiatric Interview (M.I.N.I.) confirmed the diagnosis of *dysthymia*.

- The dimensional personality assessment (Temperament and Character Inventory - Cloninger) revealed a profile that did not raise the suspicion of a personality disorder. High self-directedness (33) and cooperation (36) scores were obtained, *despite the fact that the novelty seeking score obtained by the teenager was also high* (30) (Cloninger et al., 1994).

- The categorical assessment using the Structured Clinical Interview for DSM Axis 2 Personality Disorders (SCID II) did not validate any personality disorder.

- Beck Hopelessness Scale = 1 (a low score which is not correlated with high suicide risk, or at least it does not predict such a severe suicide attempt) (Beck et al., 1990).

- Suicide Intent Scale = 0 (practically no suicide

intention)

- The Life Event Scale revealed a low stress level for the year preceding the suicide attempt, 51 LCU (Life Change Units). For a high stress level, the score should have exceeded 250 LCU. The way in which the patient perceived stress was not assessed, for it would have involved the use of perceived stress scales, which was impossible, given that out of 50 patients who developed suicidal behavior, he obtained the lowest score in the Life Event Scale test.

Dysthymia specifiers

- Observation: irritability in children and teenagers must last for at least 1 year.
- We can talk about an early onset of the disease only if it occurs before the age of 21.
- The onset of dysthymia is often insidious in early life stages (childhood, adolescence) and has, by definition, a chronic course.
- An early onset increases the likelihood of comorbidity with personality disorders and drug abuse.
- Case-related observation: We note the absence of both personality disorder and drug abuse diagnoses.

Discussions

1. Refining diagnosis using the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM V). The issue of specifiers.

Today, DSM-V brings a series of novelties such as diagnosis clarifications provided by specifiers. In DSM-V, these specifiers were added to mood disorders. They are valuable because they offer potential explanations for suicidal behavior.

Resumption of the case discussion in 2013

Seven years after the incident, he came back to the outpatient psychiatric unit, asking me to examine his mother, who was lately having trouble sleeping. I diagnosed her with anxiety disorder and treated her consequently. I also went over the circumstances of that day with D.S.B., who told me that he had felt on the edge. He had thought that his future was compromised and that his father was surely no longer going to support his football career if he was not willing to do such a minor thing for him. He could not see any other solution, he could not control himself. Now, he could not explain his decision and thanked his family, his doctors and God for the fact that he was still alive. He went to psychotherapy sessions, dropped football, graduated from college and he now kept the books of the family business.

You dropped football??? I asked surprised.

Yes Doctor……

He confessed to me that he had dropped football because shortly after his suicide attempt, he became aware that it was practicing this sport that almost cost him his life. He could not stand being a substitute player. He felt the need to be on the field at all times and to keep possession of the ball in order to save the team through the goals he scored (he was playing forward). He did not miss any training session, even if he caught a cold, was tired, had to study for his exams or it was raining outside. His coach believed that he was out of shape for several weeks in a row prior to his suicide attempt, so he mostly sat on the bench. Shortly after being discharged from psychiatry, he realized that playing football had become a problem, in a way that he could not define. He did not have a girlfriend; he did not go out with people other than his team mates; he felt sad every time he was prevented from playing and he was in a good mood only when the coach allowed him to play; he often fought with his father, who was no longer willing to fund his sports competitions because his entire life revolved around football and nothing else.

DSM-V – A new perspective on the diagnosis of dysthymia

Taking into account the activation event, which generated frustration and distress, potentially leading to the following erroneous cognitive interpretation caused by overgeneralization: *"my father does not value me if he does not buy me a jacket on Christmas Eve", "the coach keeps me on the bench all the time", "my father will no longer support my participation in sports competitions"*.

Could we have added one more specifier to the assessment of this case?

ICD-10; DSM-IV-TR does not allow any other specifiers than the age of onset. Nevertheless, DSM-V offers us today the possibility of some psychopathological clarifications in the case of depressive disorders, such as *dysthymia with anxious distress*.

Table I

The "anxious distress" specifier (according to DSM-V)

Anxious distress is defined as the concurrence of at least 2 of the following symptoms:
1. The feeling of edginess *
2. The feeling of inexplicable restlessness*
3. Finding it hard to focus due to anxiety*
4. The feeling that something bad is going to happen
5. The feeling that he/she is going to lose control*
Note: High levels of anxiety are correlated with a higher suicide risk, a longer illness and a higher chance of unresponsiveness to treatment.
Degree of severity:
Mild - 2 symptoms;
Moderate - 3 symptoms,
Moderate-severe - 4-5 symptoms,
Severe - 4-5 symptoms coupled with motor agitation
* symptom encountered in D.S.B. case

The answer to the question *Could* D.S.B. *have committed suicide because of a leather jacket?* is NO, this could not have been the ONLY cause. However, the presence of this "detail", considered a specifier according to the new diagnosis manuals, aggravated the disorder. This detail became an acute stressor agent given that there was no chronic stress in this case. In the year preceding the suicide attempt, the patient faced a small number of stressful events. In fact, we cannot talk about burn-out, in his case. From our point of view, the explanation of his suicidal behavior lies in the fact that, in 2006, the persistent depressive disorder occurred at a time when the teenager was shaping his personality. However, we cannot state that we had answers to all of our questions, back in 2006.

2. Refining primary diagnosis using the new clarifications: the issue of comorbidity

a) Early-onset dysthymia with anxious distress. Major depressive episode in comorbidity with dysthymia (double depression). Suicide attempt by hanging (X.60)

or

b) Early-onset dysthymia with anxious distress. Major depressive episode in comorbidity with dysthymia. *Exercise addiction*. Suicide attempt by hanging (X.60)

According to Glasser (1985), perseverance and excessive training in any sport which primarily involves running (e.g. football, in the case of our teenager) may cause addiction. Moreover, slowing down or, even worse, stopping entails true weaning symptoms specific to the clinical presentation of depression. A paradox of drug addiction behavior thus appears: athletes, marathon runners, football players stop drinking alcohol and smoking, habits which are considered to be negative addictions, but develop another form of addiction instead, that of achieving an ever higher athletic performance, athletic bodies like the ones of those practicing body-building. This addiction is based on a strong pathophysiological mechanism – that of reward circuitry with an intermediary stop in the accumbens nucleus located in the limbic system – involving endogenous endorphins and a body perception disturbance that affects one's view of oneself, more precisely dysmorphobia.

Table II

Exercise addiction criteria (Veale, 1991)

1. Stereotypical physical activity performed more than once a day.
2. Emotional investment in physical activity.
3. Growing tolerance to ever more intensive exercises.
4. Weaning symptoms such as sadness, anxiety, feelings of depreciation and guilt, lack of appetite triggered by the voluntary or imposed discontinuation of training.
5. Alleviation or disappearance of the weaning symptoms upon resumption of training.
6. Subjective perception of the compulsive need to work out.
7. Rapid resumption of the compulsively-practiced activity after a temporary disruption.
8. Intense training despite severe physical illness and the ban of physical activity by doctors or coaches.
9. Family conflicts caused by the practicing of the physical activity.
10. The subject forces himself to lose extra weight to improve his athletic performance.

Case-related note: The teenager who is the subject of this case study meets 7 of the 10 criteria (1,2,3,4,5,7,9), which most likely indicates exercise addiction.

The endogenous opioids referred to above are β-endorphin, enkephalin and dynorphin.

The release of β-endorphin plays a major role in addictive behaviors. Training increases the release of β-endorphin which, by binding to the *μ-opioid receptors of the accumbens nucleus and the ventral tegmental area,* helps produce *hedonic effects.* Moreover, endorphins also bind to the *periaqueductal grey matter μ receptors, where they have an analgesic effect, or to the locus cœruleus, where they help produce sedative effects and the weaning reaction* (Nestler et al., 2009). We note that this is the same pathophysiological mechanism as the one involved in opioid addiction (e.g. heroine). The μ receptors are located in the GABAergic interneurons which inhibit the dopaminergic neurons of the ventral tegmental area. By inhibiting GABAergic neurons, opioids stop the inhibition of dopaminergic neurons. Due to this fact, opioids have an addictive effect. Only opioids acting on k receptors inhibit dopamine release in the synaptic cleft and they do not have any motivating or exhilarating effects. Due to this fact, naloxone and naltrexone (opioid receptor antagonists) are used in the short- or long-term treatment of addiction (Dehelean, 2010).

Nowadays, this pathophysiological hypothesis also applies to the treatment of alcohol addiction. It is probably just a matter of time before these pharmacological treatments start being applied to other forms of addiction as well (Griffith et al., 2005).

It must be said that DSM-V has not included *other* types of addictions – such as the ones mentioned hereinbefore (sport - fitness or running, sexual intercourse, shopping) – on the list of positive addictions *yet*, next to the *"classical"* pathological game use (casino, roulette, cockfights, slot machines, blackjack). As a matter of fact, the listing of computer game addiction (e.g. World of Warcraft) among psychiatric diagnoses has been long awaited, but has not been achieved yet.

This discussion is worth having, for two reasons:

a) It is a fact that addiction and suicidal behaviors are intertwined – more than half of the classical gamblers have suicidal thoughts and approximately 17% of them develop suicidal behavior (according to DSM-V).

b) There has been an increase in the number of cases of exercise addiction described in the literature, and in France, there are even rehab centers for exercise addiction (Château de Thianty).

Conclusions

1. Depression bears the germ of suicide. It represents, for this reason, one of the most redoubtable disorders of the modern world, being at the same time one of the most frequent. The development of suicidal behavior in specific cases is far from being understood and solutions are yet to be found.

2. Persistent depressive disorder is an intense disorder which affects several functioning areas and has a negative impact on vocational performance. The presence of dysthymia in comorbidity with another dysfunctional addictive behavior such as exercise addiction increases suicide risk in geometric progression.

Conflicts of interests

There are no conflicts of interest.

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