

Taekwondo and Social Integration Training are Therapeutic Means against Addiction in Adolescents with ADHD

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Abstract

Addiction problems affect the social functioning of the individual and have an impact on all spheres of life of the addict. People addicted to a substance may even find themselves lacking in benchmarks and drifting away from what constitutes their attachment links with their social environment. Those are most at risk of developing a substance use problem and of being on the lookout for concomitant problems such as ADHD. Studies have found a relationship between the presence of ADHD in adolescents and the use of psychoactive substances. Armstrong and Costello (2002) the main objective of this research is to understand the impacts of the Taekwondo Program and Social Integration Training (**T.P.S.I.T**) on adolescents with addictive ADHD and to explore the various intervention strategies that promote their development. A questionnaire called the Adolescent Substance Abuse Severity Index (IGT-ADO) was conducted among a sample of 24 adolescents with ADHD. The results present positive impacts of the **T.P.S.I.T** that is more durable than approaches that mainly target the repression of deviant behavior; differences between the two groups regarding young people's concerns about their consumption ($\chi^2 = 0.26$ $p < 0.001$) ($\chi^2 = 1.17$ $p < 0.001$) and their estimate of the need for help with their consumption ($\chi^2 = 7.81$ $p < 0.001$) ($\chi^2 = 8.31$ $p < 0.001$). In conclusion, all of these results confirm that **T.P.S.I.T** is an undeniably emotional and behavioral therapeutic pathway for these adolescents with ADHD in addiction. The **T.P.S.I.T** connects the body, heart and mind and has expected effects and impacts in the medium and long term.

Keywords : Taekwondo, ADHD, addiction, martial art.

Introduction

The adolescent suddenly passes from periods of self-satisfaction to phases of withdrawal, confusion, and disapproval due to the suppression of the landmarks of his childhood (Azida & Bernard, 2009). Specific supervision is often useful and sometimes even necessary to help young people overcome the pitfalls put in their way, either by life or by themselves. Among these pitfalls the consumption of psychoactive substances (American Psychiatric Association, 2013), Dependence represents an unsuitable mode of consumption of a substance that alters the functioning or causing suffering. Alaux-Cantin et al. (2013) The consumption of psychoactive substances can however become problematic during this period of development when, for example, it becomes weekly or abusive (Amos et al., 2004). The reasons for using are linked to personal problems (Arvers et al., 2003). establish a positive relationship between the presence of ADHD symptoms and the consumption of psychoactive substances in adolescents (sedatives without prescriptions; hashish; marijuana; amphetamines; LSD, ecstasy, cocaine, magic mushrooms; inhalants) (August et al.,

2006) Arvers P, Assailly JP, Batel P, et al, 2003) Over 35% of adolescents with ADHD consume one or more substances, compared to 20% of those without ADHD (Bailly & Odile Jacob, 2009). The presence of ADHD in childhood is thought to be associated with a higher risk of developing a substance use disorder in adulthood. One third of young people with ADHD have a high risk of substance abuse in adulthood (Gould & Carson, 2008). Nicotine et marijuana addiction in adult boys and girls. Many prevention and intervention strategies, including those involving the practice of martial arts, have been developed to prevent behaviors in adolescents with ADHD (Fréchette, 1999). Indeed, recreation and martial arts have a power of attraction that is difficult to develop by other social organizations. Hebert (2003) Martial arts as a lever for intervention with young people can generate a positive impact on their development and see immense potential and an innovative and effective alternative to intervention (Lefèvre, 2012), the practice of martial arts seems enjoy a strong reputation with many social stakeholders and with decision-

makers. In fact, several programs are set up in schools and in community settings in order to prevent the consumption of psychoactive substances and to improve the psychosocial capacities of young people. Lefèvre et al. (2005) this study is interested in the use of a martial art as a lever for intervention in a population where the intervention must be rigorous in order not to generate perverse effects (Pantaléon, 2003). Programs using martial arts would have positive repercussions for young people, namely improving interpersonal relationships, channeling aggression, internalizing the learning of sports rules and going beyond their own limits (Coakley, 2011). Martial arts can also be a good way to reform addictive adolescents with ADHD, since it would allow them to structure their lives according to traditional values and goals, to place them in a controlled environment, to teach them mastery, of self, obedience to authority and compliance with rules, and to provide them with pro-social role models (Ekholm, 2013). Martial arts would improve an individual's academic skills and improve their employability, since the skills acquired could be transferred to other spheres of an individual's life (Habersetzer & Habersetzer, 2000). A social integration component is paired with the training program component. Personal and social development workshops are offered to participants in order to promote their social integration. Participants appreciate that there are social integration activities after training.

Taekwondo allows learning from structured educational activities through which the individual learns to live in peace with himself through rituals, moral codes and symbols (Beaudry, 1992) Some see Taekwondo an innovative way of intervening with adolescents with addictive ADHD (Hebert, 2011). The Taekwondo and Social Integration Training (**T.P.S.I.T**) Program has been beneficial for their mental health and social adjustment. Weiser et al. (1995) This beneficial dimension of Taekwondo is conditional on a traditional teaching, within which the rituals and the philosophy of this discipline are respected. In fact, the use of Taekwondo in this population has positive repercussions, particularly concerning anxiety, self-esteem, optimism and pro-social behavior (Trulson, 1986). Traditional Taekwondo training, with the teaching of the philosophy that surrounds it, compared to training without it, decreases anxiety; the aggressiveness and pro-social behaviors of adolescents with addictive ADHD. (Vertonghen & Theeboom, 2010).

The work of (Lakes & Hoyt, 2004) and that of (Steyn & Steyn, 2009) provide similar results. Young people who practice Taekwondo see an increase in some of their psychosocial and personal capacities. Finally, (Reynes & Lorant, 2004), comparing young people practicing Taekwondo with young people playing hockey and young people not practicing any sport, state that young people practicing Taekwondo obtain better scores on self-esteem measures and personal growth. Studies that focus on the effects of Taekwondo in adolescents with addictive ADHD therefore offer fairly positive results. The authors state that it is important to build on Taekwondo pomsaes and meditation through teaching Taekwondo to adolescents with addictive ADHD (Davis & Menard, 2013).

The biggest difference between the use of Taekwondo with ordinary youth and those with addiction is in the program and the context surrounding the sport activity (Danish & Nellen, 1997) the goals of the **T.P.S.I.T** program are to demonstrate to adolescents with ADHD that the skills physical and mental are important in everyday life and that obstacles to their goals are surmountable (Papacharisis et al., 2005). Improved abilities to set goals solve problems and increase positive thinking (Lapointe, 2011). The trainer interacts and intervenes with adolescents with addictive ADHD directly within Taekwondo. (Payne, 1997). Taekwondo is increasingly popular with the general population and particularly with adolescents with addictive ADHD (Hebert, 2003). Social educators also seem to have a passion for Taekwondo, since it is increasingly used in a preventive and educational way, particularly in mental health and drug addiction (Fuller, 1988). Finally, (Egan, 1993) affirm that it is important to put in place strategies allowing adolescents with ADHD addiction to transfer the capacities and skills acquired to other areas of their lives. Taekwondo could provide adolescents with addictive ADHD with a reflection to learn to live. This is why Taekwondo, as a martial art, seems more appropriate to us because it offers techniques of control to end a conflict and be like a school of life (Gleser & Brown, 1988). This **T.P.S.I.T**, or sports therapy, program, based essentially on the practice of Taekwondo, is intended to be both an alternative measure and a preventive measure for addicted ADHD adolescents. The **T.P.S.I.T** program gives adolescents with ADHD addiction by offering them sessions with discussion and reflection workshops targeting themes touching the social values acceptable to the majority. Over a period of one year at a rate of 3 times a week, ADHD addicted adolescents address friendship, politeness, respect, self-control, modesty, honor, sincerity and courage and seek to live these concepts with their peers. In order to ensure that the objectives are achieved, the person in charge or the instructor reserved the right to keep the young person in the **T.P.S.I.T** program until he is judged fit to resume his life in hand. For the program coach, who has worked with this clientele, it is encouraging to see the changes observed. This is why it is important to know that martial arts have been part of traditional Japanese life for several centuries (Ortega, 1996). Looking at the impact of Taekwondo on these people, it's hard to imagine that the same could be true for Tunisians and even Americans. Our cultural difference is based on having rather than being and our approach to Taekwondo is more athletic than educational. It is therefore obvious that Taekwondo seen in a sporting way cannot have the same impact as in Japan. In light of this observation, as the literature shows, some authors wanted to see what Taekwondo could bring to addicted adolescents with ADHD. We believe that the **T.P.S.I.T** program is a concrete example of action that has contributed to helping addicted adolescents with ADHD. This program, or sports therapy, based essentially on the practice of Taekwondo is intended to be both an alternative measure and a preventive measure for these young people. Taekwondo is an instrument used to channel aggression and reduce aggressive behavior of a destructive nature, all this while keeping as its primary goal to pacify the behavior of the young. (Hebert, 1998), ADHD addicted adolescents seek an inner path to live in harmony with

themselves and others and they need benchmarks in the society in which we live. Since Taekwondo, which is a path of the martial arts family, allows the ultimate fight with oneself to get to know each other in action; it is obvious that a process of personal and social growth can then take place within each practitioner (Hebert, 1998). Indeed, the action must take place within a rather informal sporting framework, but within which the respect of the rules and the regularity of the interventions are advocated, and where the rules are fixed progressively by taking into consideration the participants. of the program (Gasparini, 2008). In addition, working in a small group would be preferred in this type of program, since it is more effective and more conducive to the achievement of the social goals of adolescents with addictive ADHD (Coalter, 2007). This would allow the coach to clearly determine what the specific needs of each of the participants. It is important for the young person to feel connected to others and to develop a sense of belonging to the program in order to maximize its effects (Haudenhuyse et al., 2012). Working in a small group can have a significant impact on creating bonds among participants in its development and maximizing the effectiveness of a program (Coakley, 2002). Finally, it is important to emphasize the need for young people to have a voice, to be heard by the intervener of the program, in order to be an actor, an active agent of its integration (Donnelly & Coakley., 2002). Indeed, as demonstrated in the scientific literature, the use of the **T.P.S.I.T** program as an intervention lever can have beneficial effects on the prevention of behavior in adolescents with addictive ADHD, in particular with regard to relates to the formation of good self-esteem, the development of reasoning skills, social and moral skills and the channeling of aggression.

Experimental Section

Population Selection: Inclusion/Exclusion Criteria

The present study is a randomized controlled study registered within the Clinical Trials registry (NCT0478749). Forty eight immature Tunisians with dependence (48 males) were signed. They constitute a representative sub- sample of dependence cases from the Tunis Addiction Rehabilitation Center (Tunisia). They were aimlessly allocated to a TKD group (n = 24, age 15, 24 males) or a control group (n = 24, age = 15.2, 24 males). A total sample size of 48 members was demanded. A sample size of 24 participants was chosen, who attended all practice sessions. To be eligible to partake in the study, participants were demanded to meet the following criteria

- new requests for support.
- To be appertained to a support service or to an ferocious follow-up service
- to be appertained in the service of enforcement whether or not the family is willing to admit services
- only one adolescent per family was named for the study. Original institutional ethical blessing was handed for this study, which was conducted in agreement with the 1964 Helsinki protestation and its posterior emendations.

Written informed concurrence was attained from the participants and their parents following verbal description of all experimental details, and former to experimental data collection. The study was carried out from December 2017 to

December 2018. The participants of the TKD group performed specific TKD ways, poomsaes and Social Integration Training. Participants in the control group don't engage in any physical exertion,

Measures

The Adolescent Substance Abuse Severity Index (IGT-ADO) (Germain et al., 1998).

This section of the questionnaire focuses on the main indicators recognized to assess the severity of consumption. It is divided into 25 points relating to: the nature of the psychoactive substances consumed (alcohol, cannabis, hallucinogens, other drugs); the mode of administration; the place generally associated with consumption; the number of different psychoactive substances consumed; the age and the regularity of consumption the negative consequences of consumption (the "balck out", the "bad trip", overdose or the presence of debt); the intensity of the difficulties experienced in relation to consumption; the estimate of the disturbance associated with consumption (scale from 0 to 4); and the estimate of the need for help (scale of 0 to 4). The data collected from young people are reliable and have shown good validity in previous studies (Realmuto et al., 2009).

TKD Intervention

Taekwondo Program and Social Integration Training (T.P.S.I.T)

Using, Taekwondo as a vehicle for change. The TKD group rehearsed specific exercises for one hour three times per week and a different day per week, where the party arrives at 9 a.m., receives Social integration training for a time. Particular and social development shops are offered to participants in order to promote their integration. The trainer offers shops grounded on his particular social knowledge. It's important that the trainer explains to the participants the explanation for his important speech. Training sessions took place between 6 and 7 pm. The intervention took place in the Tunis Addiction Rehabilitation Center (Dojang). The TKD intervention program comported of the specialized skill development aspect of the sport (e.g., blocking, punching and remonstrating) and poomsae (forms; they're a series of arranged physical movements performed with specialized perfection in a particular order). This alternate exertion consists of different stages in which high situations of attention are demanded to execute the movements, including blocks and kicks, with perfection in the correct order. At each stage of progression movements come more grueling. Sparring sessions some training- related games are sometimes played. Music, intended to motivate the group during training, the sound of training bells is also part of the sound terrain of the place. New forms for 30-min. ahead and after each training session, participants completed a 10-min general warm-up (stretching, jogging and strengthening, sitting-up and pushing-up) at the end of the training, there were exercises to strengthen abdominal and push-ups and recovery, independently. The TKD intervention was conducted by good TKD educator (researcher). The terrain offered to participants is rather friendly and informal, creating an intriguing dynamic.

Statistical Analysis

A priori power analysis computation of the sample size was carried out with the software G * Power Version 3.1.9.2 (Heinrich Heine University Düsseldorf, Düsseldorf, Germany). A significance level of p-value ≤ 0.05 was set for all analyzes other than the t-tests where the Bonferroni adjustment was applied. All statistical analyzes were carried out using the commercial software Statistical Package for the Social Sciences for Windows version 16.0 (SPSS Inc., Chicago, IL, USA). We first carried out a descriptive analysis and then a hierarchical

multiple regression which aims to describe and compare the consumption of psychoactive substances in the two groups of adolescents receiving a training program, Student t-tests were used to identify baseline differences between groups and training effects over time, with the Bonferroni correction used to provide protection from multiple testing. Dependent variables were analyzed using separate 2 (groups: TKD group-control group) - 2 (time: before, after) analysis of variance (ANOVA).

Results

Consumption characteristics (%)	TKD GROUP					CONTROL GROUP				
	%	Pre	Post	P	T/ χ^2	%	Pre	Post	P	T/ χ^2
Alcohol (%)	97,2	93,4	0,1	<0.001	0,26	96,3	96,8	23,4	<0.001	1,32
Cannabis (%)	89,7	83,3	2,4	<0.001	5,49	89,2	81,4	21,6	<0.001	6,17
Amphetamine (%)	71,3	53,1	2,2	<0.005	0,01	70,6	96,8	9,9	<0.005	0,08
Cocaine (%)	7,3	6,3	0,2	<0.001	0,64	7,1	6,5	4,4	<0.001	0,93
Hallucinogenic (%)	58,1	37,1	2,4	<0.001	7,81	63,2	41,6	27,2	<0.001	8,01
Negative consequences associated with consumption (%)										
Black out %	16,8	23,1	2,1	<0.001	0,26	18,6	23	16,4	<0.001	0,78
Bad trip %	27,8	34,2	1,6	<0.003	5,49	29,7	26,9	28,2	<0.003	6,62
Overdose %	2,1	1,7	0,7	<0.001	0,01	2,19	1,2	1,1	<0.001	0,43
Debt%	20,3	8,5	1,1	<0.002	0,64	19,9	8,7	27,3	<0.002	1,81
Estimate of the need for help by the young person (%)	73,2	54,6	3,1	<0.001	7,81	74,4	57,3	31,2	<0.001	8,31
Diversity of psychoactive substances consumed (standard deviation)		1,90 (0,92)	0,32 (0,20)	<0.001	0,26		2,83 (1,12)	4,65 (0,92)	<0.001	1,17

*p<0,05 **p<0,01 ***p<0,001

Mean values and standard deviations (SD) of the IGT-ADO pre- and post-intervention, their statistical significance

Table presents the mean and SD results for the dependent variables. Comparisons between the TKD group and the control group on pre-test measures did not reveal any statistically significant differences in consumption characteristics. For post scores, there were statistically significant differences between the groups on the Alcohol (T = 0.26, p < 0.001) (T = 1.32, p < 0.001), Amphetamine (T = 2.2, p < 0.005) (T = 9.9, p < 0.005), the Cocaine (T = 0.64 (T = 0.93, p < 0.001), the Cannabis (T = 5.49, p < 0.001) (T = 6.17, p < 0.001), and Hallucinogenic (T = 7.81, p < 0.001) (T = 8.01, p < 0.001). Similar trends were reported for the negative consequences associated with consumption: Black out (T = 0.26, p < 0.001), (T = 0.78, p < 0.001), Bad trip (T = 5.49, p < 0.03) (T = 6.62, p < 0.003) Overdose (T = 0.01, p < 0.001) (T = 0.43, p < 0.002) and Debt (T

= 0.64, p < 0.001) (T = 1.81, p < 0.002). Finally, there are differences between the two groups concerning the concerns of young people with regard to their consumption ($\chi^2 = 0.26$ p < 0.001) ($\chi^2 = 1.17$ p < 0.001) and their estimate of the need for help concerning their consumption ($\chi^2 = 7.81$ p < 0.001) ($\chi^2 = 8.31$ p < 0.001) Overall, the results of the present study indicate that there are differences between the TKD group and the control group on all of the dimensions related to their consumption of psychoactive substances after the T.P.S.I.T program, except for the proportion of TKD groups having had a bad trip compared to the control group. Hierarchical multiple regressions were used to identify the variables most strongly associated with substance use among young people.

Discussion

The results of the present study show a high prevalence of consumption of different substances among addictive adolescents with ADHD referred to the application of measures from the Tunis Addiction Rehabilitation Center. The multiple problems experienced by these adolescents may explain the high rates of consumers. Indeed, these studies have made it possible to establish a positive relationship between the presence of ADHD symptoms and the consumption of psychoactive substances in adolescents (sedatives without prescriptions; hashish; marijuana; amphetamines; LSD, ecstasy, cocaine, magic mushrooms; inhalants) (Andrews & Andrews, 2003). This contradiction between the results of our study and those of the studies reviewed may possibly be explained by the provenance of our subjects. The latter were recruited at the time of their entry into the application of the measures of the participating Tunis Addiction Rehabilitation Center. However, these young people are characterized by many personal and family problems which could be associated with a greater consumption of psychoactive substances. (Gudjonsson et al., 2012) Therefore, considering that the family plays a pivotal role in the consumption of young people (Goldstein, 2013), the family dysfunctions encountered in young people referred to the care of the Tunis Addiction Rehabilitation Center can have a considerable impact on the consumption of adolescents of our sample. This would also have an influence on the risk of consuming psychoactive substances (Frauenfelder, 2011). In this regard, when we compare the TKD group with the control group of our sample, we note that there is a significant difference of 2.4% for the TKD group and 21.6% for the control group for cannabis use after the **T.P.S.I.T** program this figure raises to 23.4% for alcohol. Participate in the **T.P.S.I.T** program for participants to develop healthy lifestyles. They have developed a routine, where they have to get up in the morning, show up to the gym and workout, eat well and rest in order to be able to perform every day in training. Participants experienced a change in their lifestyle following their integration into the **T.P.S.I.T**. The consumption of psychoactive substances can worsen the difficulties experienced by these young people. For example, the use of cannabis can accentuate the difficulties of concentration already present in these young people and can even have an impact on the mechanisms of learning and education (Winters et al., 2011), The **T.P.S.I.T** program with these adolescents with ADHD dependent on the consumption of psychoactive substances has evolved adequately. Psychiatric disorders or other problems experienced by these young people can influence the consequences of drug use on their mental state and on dependence. Indeed, the comorbidity between mental disorders and drug use can lead to a dual pathology which will have a negative impact on the quality of life and the overall functioning of the individual (Wilens et al., 2011). Throughout their time in the **T.P.S.I.T** program, participants experienced a certain self-realization. Through the various trainings, they have been able to become aware of their evolution and have derived a valuation from it, which gives them a motivation to work even harder This ability is all the more important to develop in a context of social integration where participants have to transfer this ability to other areas of their life. Luquiens et al.

(2014) This dynamic can have positive effects on the behavior of these addicted adolescents with ADHD, since it allows them to reduce the gap between their aspirations and their perceived capacities (Speranza & Valeri, 2010). Participating in the program allowed these adolescents with addictive ADHD to take the time to refocus on themselves. They became aware of their needs and gave themselves the right to prioritize them. The participants who really internalized the aims of the **T.P.S.I.T** program experienced the most positive repercussions on a personal level. The practice of Taekwondo brings about a change in their identity, a change which brings about a certain informal control over their behavior (Jilla, 2013). The use of Taekwondo among the participants had a cathartic discharge function (Pfister, 1985). On the other hand, the participants seem to have integrated the values of non-violence advocated by this martial art. It is important to combine technical learning with values of respect. The participants experienced positive repercussions of their time in the **T.P.S.I.T** program, in relation to their physical form. Training several times a week for a long period of time improves the physical health and body image of the participants, which takes pride in them. Be in the program created a sense of belonging for them. This sense of belonging is directed towards the **T.P.S.I.T** program and towards the Dojang within which it takes place. The coach uses this sense of belonging when talking to participants, especially to encourage them to be calm and respectful outside of the Dojang. The environment has an attraction effect on the participants of the **T.P.S.I.T** program (Carrier, 2013). This effect helps to establish an effective and lasting intervention with the participants. This dynamic of mutual aid and cooperation is rather experienced by the participants who invest in training. There is a positive impact on keeping participants busy so that they have less free time to engage in risky behaviors (Kelly, 2012).

Conclusion

As in the studies reviewed, in the subgroup of adolescents with ADHD addiction, it is the young people who did not have the program (**T.P.S.I.T**) who demonstrated more problematic use. Specifically, the TKD group had a significant difference regarding hallucinogens and cocaine. Likewise, the control group demonstrated a greater diversity of substances in their consumption than the TKD group and a significant difference for cocaine use. It should be remembered, however, that the present study concerns a sample of young people receiving services in the Tunis Addiction Rehabilitation Center and that this sample is not representative of the general population. The results should therefore be communicated with caution. It nevertheless emerges that, according to the theory of the developmental perspective, it is relevant to offer the adolescent an adequate way to meet his needs and difficulties so that he can evolve adequately in each of the situations stages of his life. The escalation of ADHD symptoms and its possible impact on the life of the young person (consumption, development of comorbidity, etc.) therefore suggests the importance of professional care at a young age. In addition, since the adolescents treated by the Tunis Addiction Rehabilitation Center are more likely to use psychoactive substances compared to those in the general population, the

relevance of doing prevention must be recognized by the workers of this organization. Finally, since the family plays a pivotal role in consumption, the interventions carried out with these adolescents must take this reality into account. It would therefore be relevant to carry out a study targeting the different intervention methods (medical, social, personal, educational, etc.)

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