

Exercise rehabilitation for smartphone addiction

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Internet addiction after launching smartphone is becoming serious. Therefore this paper has attempted to sketch out the diverse addiction treatment and then check the feasibility of exercise rehabilitation. The reason to addict the internet or smartphone is personalized individual characters related personal psychological and emotional factors and social environmental factors around them. We have shown that 2 discernible approaches due to 2 different addiction causes: that is behavioral treatment and complementary treatment. In the behavioral treatment, cognitive behavioral approach (CBT) is representative methods for changing additive thoughts and behaviors. Motivational interviewing (MI) is also the brief approach for persons not ready to change their behavior. Mindfulness behavioral cognitive treatment (MBCT) also the adapted treatment based on CBT. There are different types following

the emphatic point, mindfulness-based relapse prevention (MBRP) or mindfulness oriented recovery enhancement (MORE). It is apparent that therapeutic recreation, music therapy using drumming activity, and art therapy are useful complementary treatment. Exercise rehabilitation contained the systematic procedures and comprehensive activities compared to previous addiction treatments by contents and techniques. Exercise rehabilitation can treat both physical symptoms at first and mental problems in the next step. So more evidence-based exercise rehabilitation researches need to do, but it is highly probable that exercise rehab can apply for smartphone addiction.

Keywords: Smartphone addiction, Exercise rehabilitation, Cognitive behavioral therapy, Complementary treatment

INTRODUCTION

The penetration rate of smart phones in Korea was recorded 67.6% as the world's #1 in June, 2013. This is 4.6 times of the world average penetration rate, 14.8% and 10% higher than Norway ranked to second higher penetration rate (55.0%). In the case of 2012, the "Anyang game" craze was exploding in Korea. The daily number of that game was 10million. It means almost every people using smart phone played the Anyang (Jung, 2012).

According to the "2011 Internet Addiction Survey" by Korea Internet Development Agency and Communications Commission, 8.4% of Korean people were heavily addicted to the smartphone. Smartphone addiction ratio is higher than the entire internet addiction. Problem is that 11.4% of 10 generation 10.4% of 20 generation was addicted to the smartphone.

The cause of addiction is enormous convenient mobile comput-

ing function of smartphone such as portable media player, high speed Wi-Fi mobile system. Smartphone carrying in the hand can access the internet more easily and conveniently than PC. Great variety of apps and games for smartphone are being made.

The general form of internet addiction can be divided into a game, chat, pornography, but the smartphone addiction can create a new addition category such as SNS or app addition. In addition to, in comparison with other media, smartphone require more intervention and activity by subject, immediate connectivity and social interaction as a game affect to the game immersion and addiction.

Seoul Metropolitan Office of Education surveyed the habit of using internet of middle school and high school students in March, 2013. As the results, 6.51% of the total number of smartphone users used the phone excessively. Among them, 4,585 students (1.81%) were risky users; they cannot done properly school work,

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interpersonal relationship and feel psychological anxiety and loneliness without using smartphone (Online news, 2013).

Smartphone addiction is not a personal problem. Addiction to smartphone has induced serious abuses problems more and more, especially to young students. This is the time to find the way to rehabilitate from the smartphone addiction at the national level. As reviewing the previous study about internet addiction, the addiction research for rehab is relatively young is still establishing its basic treatment. In the case of addiction, except the pharmacotherapy, the behavioral approach to stimulate cognition and behavior has been applied typically. One of outstanding features employed in this device is that various treatments have been approved to help addicted individuals.

The commission on youth protection in Korea developed internet addiction treatment and addiction model in 2004. After 2005 they accomplished youth family camp for internet addiction and natural cure programs with Korea green culture foundation in 2007 (the Commission on youth protection, 2008). Analyzed the camp and other addiction program, there is growing body of attempts to cure the addiction not just focusing on the classical treatment.

Therefore this paper attempts to review the addiction treatments concerning general addiction and smartphone addiction from previous researches and offer the possibility of exercise rehabilitation for smartphone addiction.

INTERNET AND SMARTPHONE ADDICTION

What is smartphone addiction?

There are 2 types of addiction, one is drug addiction such as drug, alcohol and the other is action behaviors such as game, internet, even smartphone. Unfortunately, internet addiction is resistant to treatment, entails significant risks and has high relapse rates (Block, 2008). In case of smartphone, there are little research has been conducted. Smartphone addiction has many aspects that are similar to those of internet addiction and as such the internet addiction criteria must be considered when developing smartphone addiction criteria. So this study searched internet addiction treatment program for curing the smartphone addiction.

The terms Internet addiction were identified based on the Diagnostic and Statistical Manual, VI-TR definition of substance abuse and pathological gambling (America Psychiatric Association, 2000), but currently it described under the category of impulse control disorder, not otherwise specified.

Dr. Ivan Goldberg first coined the term internet addiction disorder (IAD) for pathological, compulsive internet use (Brenner,

1997). Internet addiction is an overarching term characterizing five problematic Internet-related issues: cyber sexual addiction, cyber relationship addiction, net compulsions, information overload, and addiction to interactive computer games (Young et al., 1999). Symptoms of internet addiction include social isolation, family discord, divorce, academic failure, job loss and debt (Young et al., 1999).

Causes and symptoms

Approached from the early previous studies, the research has offered the reason why people are addicted to the internet. Internet addiction have relevance to 3 factors, that is specific characteristics of the internet, personal psychological and emotional characteristics and social-environmental characteristics (Choi and Han, 2006; Kim et al., 2006).

Generally people who have psychological and emotional characteristics such as depression, loneliness, social anxiety, impulsivity, distraction (Kim, 2001) easily to addict the internet. The place where internet access, the degree of time to use internet, peer relationships parenting types are also associated the addiction.

Internet addition shakes physical and psychological problems. It provokes physical symptoms such as dry eyes, carpal tunnel syndrome, repetitive motion injuries, wrists, neck, back and shoulders, migraine headaches and numbness and pain in the thumb and the index and middle fingers. As Young's research (1999), fifty-four percent of Internet addicts report a prior history of depression; 34% with anxiety disorder; and 52% with a history of alcohol and drug abuse.

ADDICTION TREATMENTS

Behavioral treatments

Following the previous studies, personal factors may play a key role in internet use and the development of internet addiction. Adolescent personality traits that correlated positively with internet addiction included high harm-avoidance, reward dependence, low self-esteem, and low cooperation (Weinstein and Lejoyeau, 2010). Poor academic achievement might be associated with low self-esteem and with behavioral problems such as sleep disorders, aggressive or depressive symptoms, dropping out of school, anti-social personality disorder and alcohol abuse (Valdez et al., 2011). Adolescents with poor academic achievements usually received less respect from surrounding people, and poor academic achievement might be associated with low self-esteem and with behavioral problems such as sleep disorders, aggressive or depressive

symptoms, dropping out of school, antisocial personality disorder and alcohol abuse. Those kinds of feelings and isolation would make these adolescents to go online in a search for sense of belonging and self-satisfaction.

Most studies have focused on the relationships between psychological characteristics and internet addiction (Choi et al., 2006). Classical treatment had focused on individual factors such as low self-esteem and aggressive and depressive symptoms. The main issue of classic treatment is how to change personal feeling and thoughts.

Cognitive behavioral approach (CBT)

CBT is the typical mental health care for develop psychological symptoms such as obsessive-compulsive disorder. CBT can assist the individual with internet addiction disorder to recognize thoughts and feelings causing person to inappropriately use the computer to meet personal needs (Orzack, 1999).

Generally, CBT is an efficacious method of treating substance abuse, depression and anxiety to substance abuse issues and drug addiction. Further to this, there is evidence to suggest that the use of integrated approaches in dealing with depression and alcohol abuse have a higher rate of success (Baker et al., 2010; Magil and Ray, 2009).

The term of CBT first appeared in scientific literature in the 1970s based on Beck's theory and has since become the treatment of choice for a broad spectrum of behavioral, emotional and psychiatric problems. To date it has been empirically tested for a range of issues including anxiety disorders, depression, obsessive-compulsive disorders, eating disorders and addiction (Frank, 2004).

CBT is a fusion of 2 distinct traditions in psychology. CBT addresses the interaction of thoughts, emotions, physical sensations and behaviors. It uses cognitive processing helps clients to recognize negative thoughts and behavioral strategies help them identify helpful and unhelpful behavior.

The role of CBT is to carefully identify the biased cognitive processes that influence behavior and decision making and to shed light on both the process of relapse and the states of mind and reaction that leave a person vulnerable to old solutions. There are 5 stages to change behavior overtime. That is pre-contemplation, contemplation, preparation, maintenance and termination. In the pre-contemplation stage, therapist focus to break the denial that a serious problem with computer uses exists. In the contemplation stage, individual recognize the need for change, but the desire to change may not be substantial and feeling or being overwhelmed may exist. In the preparation stage, the individual is ready to es-

tablish a plan to address the problem. The maintenance sate begins when the individual feels he or she has control over computer use and is putting less energy into the behavioral change. The final stage, termination has the goal to prevent relapse.

CBT is not only about making specific and identified changes to thoughts and behaviors but also making clients their own therapists. This will enable them to apply the learning developed in and between sessions to life in general.

Motivational interviewing (MI)

MI is a brief, patient-centered, directive approach that emphasized personal choice and responsibility. Generally, MI is the greatest challenges facing substance use disorders treatment agencies. Mostly person who are addicted to something, they deny the problem and do not seek rehabilitate. So for persons who not ready to change their behavior on their own, MI may help (Merlo and Gold, 2008).

Mindfulness behavioral cognitive treatment (MBCT)

Zindel Segal and colleagues found a possible solution in practice of 'mindfulness'— a type of meditation that helps people decenter from negative thoughts and associated sad moods (Segal, Williams and Teasdale, 2011). MBCT appeared to prevent relapse in patients who had experienced three and more episodes of depression. Addiction is in essence a habit. The addicted person is believed to act automatically or 'mindlessly' with little real awareness of the cues and that trigger substance misuse. The idea of promoting mindfulness could thus prove to importance in tackling addictions (Frank, 2004).

Mindfulness-based relapse prevention (MBRP) is another name of MBCT. MBRP is psych educational intervention that combines tradition cognitive-behavioral relapse prevention strategies with meditation training and mindful movement. The primary of goal of MBRP is to help patients tolerate uncomfortable states, like craving and to experience difficult emotions. Mindful movement includes light stretching and other basic gentle movement.

Mindfulness oriented recovery enhancement (MORE) is adapted from MBCT for depression treatment manual. MBRP and MORE is also the program focusing on meditative approaches to coping with cravings, as well as education and training about how to identify and skillfully change or mindfully let be, mental processes like thought suppression, aversion, and attachment (Garland et al., 2011).

Complementary treatment

Previous studies have documented that an adolescent's family environment is highly predictive for adolescent internet addiction (Nam, 2008). Moreover, a number of studies in South Korea have found family factors that influence internet addiction among adolescents. There are many researches about the relationships between protective factors such as parenting attitude, communication, and cohesion within families and internet addiction among adolescents (Hwang, 2000; Kim, 2001; Nam, 2008).

Complementary treatments have more focused on the environmental factors and use diverse activity for cure the internet addiction. There are many studies for finding the specific effective activities like music, art and even exercise for decreasing the rate of smartphone addiction.

Therapeutic recreation

Therapeutic recreation is the professional intervention for leisure life. Therapeutic recreation is the purposeful and careful facilitation of quality leisure experiences and the development of personal and environmental strengths, which lead to greater well-being for people who, due to challenges they may experience in relation to illness, disability, or other life circumstances, need individualized assistance to achieve their goals and dreams (Anderson and Heyne, 2012). There are many facilitation techniques for gaining the goal.

Few studies have examined the effect that a resource such as leisure activities might have on the relationship between stress and health among elderly men. Data from the Normative Aging Study (NAS) were used to examine whether specific groups of leisure activities (social, solitary, and mixed activities; activities performed either alone or with others) moderated the effect of stress on the health of elderly men and whether there were differences in this effect between bereaved and non-bereaved men. The sample of 799 men was divided into two groups: a group bereaved of family and friends and a group of non-bereaved. Hierarchical regression analyses compared an initial model, a direct effect model, and a moderating model. The results indicate that for both groups of men, mixed leisure activities moderated the effect of stress on physical but not mental health. Additionally, for the bereaved group, social activities moderated the effects of stress on physical health. The negative effects of life stressors (other than bereavement) can be moderated by engaging in leisure activities for both bereaved and non-bereaved elderly men. Implications of the findings for future practice and research are discussed (Fitzpatrick et al., 2001).

Family and outdoor activities along with participative and sup-

portive parental monitoring reduce the tendencies. Parental monitoring is inhibitors of adolescents Internet addiction. Thus adolescent should be supervised and monitored in their daily routines and encouraged to participate in family and outdoor activities. Further, adolescents should develop a positive attitude toward leisure and the skills to deter overdependence on online relationship (Chien et al., 2009)

Internet addicts can be a form of wrong leisure pattern. Internet addicts often encounter time-management problems. This means unbalanced time allocation and leisure boredom and unsatisfaction from unpleasant leisure activities may be motivated to seek another alternative - The Internet.

The high risk game addicted people not much leisure activity with families compared to low risk game addicted people. The more they addicted to the game, the more they want to get recreation activities or hobbies. They answered to participating leisure activity with friends (46.4%) or families (27.6%). 65.3% of young juvenile addicted the game want to participate family leisure activity. Unusual thing is students who are rich or have highly educated parents also were addicted to the game.

Music therapy: Drumming activities

Recent publications reveal the substance abuse rehab. Program has incorporated drumming and related community and shamanic activities into substance abuse treatment (Michel, 2003).

Drumming circles have important role as complementary addiction therapy, particularly for repeated relapse and when other counseling modalities have failed.

Drumming enhances hypnotic susceptibility, increase relaxation and induces shamanic experiences (Mandell, 1980). Drumming and other rhythmic auditory stimulation impose a driving pattern on the brain, particularly in theta and alpha ranges. Physiological changes associated with ASC facilitate healing and psychological relaxation: facilitating self-regulation of physiological processes: reducing tension, anxiety, and phobic reactions: manipulating psychosomatic effects; accessing unconscious information in visual symbolism and analogical representations; including interhemispheric fusion, synchronization and facilitating cognitive-emotional integration and social bonding affiliation (Mandell, 1980).

Art therapy

Park et al. (2009) applied the art therapy to game addiction juvenile for improving the self-control techniques. As a result, hostile attitude was decreased and social interaction with peer group and family members was increased.

THE APPLICABILITY OF EXERCISE REHABILITATION

Exercise rehabilitation has the evidence-based exercise science knowledge to address a wide range of physical and psychological problems. It uses exercise programs for patient rehabilitation based on exercise science. It follows the scientific process. In the clinical subfield, baseline such as physical capacity, health information, medical history, work status, previous exercise experience need to be set. After assessment, supervised rehabilitation sessions conducted for achieving the stated goals. Exercise rehabilitation aims to recover not only musculo-articular rehabilitation after surgery, chronic pain or fatigue, neurological or metabolic conditions but also even psychological conditions such as depression and anxiety.

Smartphone addiction is psychological disorder appearing physical and psychological signs and symptoms. The person who addicts the internet or smartphone not do much physical activities, they generally disregard their health, and also negative physical signs like carpal tunnel syndrome, poor posture, backaches, migraine headaches, poor personal hygiene, irregular eating, sleep deprivation, eye strain, dry eyes, lack of sleep can affect immune functioning and hormone secretion patterns, cardiovascular and digestive pattern (Diane, 2005).

Exercise rehabilitation can employ the first goal for recuperating their physical health on the surface. Moreover if they indulge in specific exercise program such as horseback riding or exercise gymnastics, treatment can be going on to the second stage. Mindfulness program is also based on yoga or physical activity for meditation. Exercise rehabilitation could seek mental changes through feeling of confidence, satisfaction, and new feeling of happiness.

DISCUSSION

There are many reasons to addiction, internet accessibility is also one of the most decisive factors for overuse by college students (Anderson, 2012; Lin and Tsai, 2002). When access is free and easy, college students tend to be vulnerable to becoming addicted to the internet (Kandell, 1998). In South Korea, anyone have easy internet access due to the nationwide internet infrastructure and may be vulnerable to pathological internet use. So fair is not fair internet and smartphone addiction. We need to regulate the internet and smartphone access.

To date, the Youth Internet Addiction rehab program was composed of classical treatment represented the behavioral and cognitive-behavioral approaches focusing on aware of the risk and se-

verity about internet addiction, and learning the way to regulate their emotions then adjust their behaviors. In response to the increasing risk of internet addiction and its negative consequences, there is a need to explore intervention models. Unfortunately, a survey of the literature shows that there are settled only a few treatment programs for internet addiction, such as CBT and MI interventions, group therapy with a combination of Readiness to Change (RtC), (Orzack et al., 2006), as well as Reality therapy group counseling programs.

We examined by references about complementary treatment using many activities for curing the internet addiction rehabilitation based on the environmental addiction factor. Therapeutic recreation is much interested on the family leisure types, music therapy using drumming activity are hypnotic susceptibility, increase relaxation and induces shamanic experiences.

Exercise rehabilitation is not much utilize the internet addiction until now, but if given that young student were most addicted to the internet, exercise rehabilitation can be the efficient activity they want to participate and also help to grow their health and mental status.

CONCLUSIONS

This paper has attempted to sketch out the diverse addiction treatment and the feasibility of exercise rehabilitation. To capitulate briefly, we have shown that 2 discernible approaches: behavioral treatment and complementary treatment. The standard to divide the treatment for addiction have drown from the addiction path and causes. There are 2 factors to causing the addition; that is personalized individual characters and environmental factors around them. CBT is representative of classical methods for changing additive thoughts and behaviors. MI is also the brief approach for persona not ready to change their behavior. MCBT also the adapted treatment based on CBT. There are different types following the stressful point, MBRP or MORE. It is apparent that therapeutic recreation, music approach using drumming activity and art therapy are useful complementary treatment. In general terms, it is highly probable that exercise rehab can apply for smartphone addiction.

The argument which is the best program between behavioral treatment and complementary treatment is waste of time. What remains to be determined by the future research is the evidence-based certain addiction study revealing the significant factors. Exercise rehabilitation program can also one of main program for smartphone addiction but considerable work needs to be done.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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