EFFECTS OF COMBINED EXERCISE THERAPY ON POSITIVE SELF-EVALUATION AND EMOTIONAL REGULATION OF CHILDREN: AN ANALYSIS BASED ON RANDOMIZED CONTROLLED TRIAL

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Abstract
Nowadays, more and more people are aware of the importance of children education. However, mental health education of children has not received enough attention. This paper aims to disclose the effects of combined exercise therapy on positive self-evaluation or emotional regulation of children. Based on randomized controlled trial (RCT), controlled experiments were carried out among children from two public kindergartens. The combined exercise therapy was applied to the experimental group only. The effects of positive self-evaluation and emotional regulation of the subjects were tested before and after the experiments, with the aid of questionnaires. The results show that the children in the experimental group had much higher scores of positive emotions and much lower scores of negative emotions than those in the control group; the overall self-evaluations of the children in the control group were significantly lower than those of the experimental group. The research results provide an important reference for mental health education for children.

Key words: Combined Exercise Therapy, Randomized Controlled Trial (RCT), Self-Evaluation, Emotional Regulation, Meta-Analysis.

INTRODUCTION
Children's emotional capability has an important influence on their growth and socialization, which can even continue into adulthood. Therefore, children's emotional capability has gradually attracted scholars' attention (Yin, Hou, Qin et al., 2016). In the early socialization of children, in order to better adapt to the environment, children use different emotional adjustment strategies to solve problems. Children's ability to regulate emotions plays a role in predicting future peer relationships and personality development. Therefore, the development of emotion regulation is considered as an important part of the emotional development of young children (Nduwimana, Mukunzi, Ng et al., 2017; Essex & Govintharajah, 2017). In the past decade, in the field of developmental psychology, more and more attention has been paid to the study on emotion regulation. Researchers have also conducted a lot of studies on the characteristics of children's emotion regulation development. In terms of the contents, existing studies are mainly limited to the development characteristics and influencing factors of children's emotion regulation ability, still staying at the stage of describing the phenomenon. In-depth studies on the internal process of children's emotion regulation and the development of emotion regulation has other psychological characteristics. In-depth studies

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on its impact are rare (Ren, Zhang, Yang et al., 2018; Riquelme-Mella & García-Celay, 2016). Besides, emotion regulation is of great significance to children's development. It should not be limited to theoretical research, but should be strengthened in practical value - how to make children have reasonable emotion regulation so as to achieve a healthy psychological state and good social communication ability (Broekhuizen, Slot, van Aken et al., 2017). Future studies should pay more attention to the practical value and improve its social benefits. In the current field of education, especially elementary education, educators and parents often ignore the influence of emotion regulation on children. Facing this problem, school education should pay more attention to children's emotions and emotional issues, and strive to foster children's emotion regulation ability (Reinking, 2015). However, for school education, education on student emotion regulation is often difficult to control, and related education progress is slow. Therefore, the problem of how to improve children's ability to regulate emotions needs to be addressed urgently, and it is very important to develop corresponding intervention programs to improve children's ability to regulate emotions (Utami, 2016; Sturje-Apple, Davies, Cicchetti et al., 2017).

Preschool teachers, like parents, support children in a way that promotes the ability to regulate, which promotes adjustment at school, especially for children who strive to succeed in class. The purpose of Karen L's study was to explore the impact of emotional and organizationally supported classroom processes on children's emotion regulation and executive control. Karen L has assessed emotion regulation and executive control of 312 children aged 3, 4, and 5. 44 teachers completed a questionnaire asking about the 3 components of children's school adaptation: active/invested, independent/active, and prosocial/relevant. Karen L observed classroom emotional support and organizational support. The results of the multi-level model indicate that emotion regulation is significantly related to the active/engaged school adaptation component, but only when teachers' emotional and organizational support are considered. Children with lower levels of emotion regulation are also scored the lowest in the active/participating section in less supportive classrooms. Children's executive control is associated with independence/motivation and prosocial/relevant components, and has nothing to do with teacher's effects. In general, teacher's support is particularly helpful for children trying to regulate their emotions to better adapt to school, a view that is moderately supported (Bierman, Mathis, & Domitrovich, 2018). Helen M used a developmental psychopathological approach to explore the vertical relationship between parental emotional expression and child self-regulation. Data from 2004 to 2008 are collected. Every year, 92 parents assess their emotional expression and their children's self-regulation. In addition, Helen M conducts observations and behavioral measurements every year to understand parents' emotional expression ability and children's self-regulation ability. Specifically, parents participate in a parent-child interaction task that provides insight into their emotional levels. Each child completed a puzzle box task to assess self-regulation. The findings of Helen M's study show that, firstly, the greater the parents' expression of negative emotions, the worse the self-regulation ability of their children. Secondly, parents' positive emotional expressions and their peaceful emotions have nothing to do with their children's self-regulation. These findings help us understand the socialization of parents' self-regulation and the role of different components of emotional expression (Milojevich & Haskett, 2018). Emotional goals are at the core of emotion regulation. Before emotion regulation, people must first decide what kind of emotion they want to feel. Matthew Allen once considered that children with Asperger's syndrome (AS) are characterized by difficulty in regulating emotions, and studied whether they exhibit similar or different emotional goals compared with typical developmental (TD) children. Matthew Allen's research methodology uses a questionnaire approach, set the general emotional goals (i.e., how they want to feel overall) and contextualized emotional goals (i.e., their presence) for 30 AS-12 children and 30 TD children, and investigate how they want to feel when working with or with others) and their difficulties with emotion regulation. The results of Matthew Allen's study show that there are no differences between the two groups' general and contextualized emotional goals in terms of happy cooperation and combating anger. Because children are only different from TD
PROPOSED METHOD

Meta-analysis

(1) Introduction to meta-analysis

In a lot of scientific research fields, for the same problem, different scholars often use the same or different scientific methods to conduct research and experiments, but the final conclusions are not the same. At this time, how can we synthesize the results of different existing studies to get a more reliable final conclusion? Meta-analysis can help us in this aspect. Meta-analysis is a statistical method that analyzes and summarizes collected data to provide a quantified average effect to answer relevant questions. Its advantage is to increase the credibility of the conclusion by increasing the sample content, and to resolve the inconsistencies in the results. It is a quantitative review of literature. It takes the results of multiple independent studies on the same subject as research objects, and uses a suitable statistical method to conduct a systematic, objective and quantitative analysis on the basis of strict design. To perform a meta-analysis, we must first determine the effect value of the research results, that is, statistics that can be used to measure the quality of the results. Usually, correlation coefficients, relative ratios, and standardized relative differences are used as effect values. Consistent effect values are the basis for meta-analysis. Only when the effect values are unified, can a comprehensive analysis of the results be possible and reliable. In actual study, evaluating an experiment or research result often requires more than one effect value.

For the same population, there is often a correlation between different effect values. If each effect value is considered as independent and a meta-analysis is performed, the correlation between the effect values will be ignored. Meta-analysis solves the problem that unit meta-analysis ignores the relevance of evaluation indicators by analyzing multiple effect values simultaneously, making the estimation result more accurate. In addition, meta-analysis takes into account the correlation between effect values and can obtain more information. Therefore, when the effect value is missing in some studies, or each study inevitably has potential reporting bias, this correlation provides more accurate inferences or reduces bias.

(2) Meta-analysis model

The meta-analysis model can be divided into two types: fixed effect model and random effect model. The difference is that the fixed effect model assumes that there is only intra-study variation between studies but no inter-study variation, and the random effect model considers that there is both intra-study variation and inter-study variation between studies. Therefore, the inter-study variation needs to be taken into account when modeling. In order to facilitate understanding, the authors first take the binary model as an example to introduce the two model forms of the meta-analysis model. In meta-analysis, a result obtained from some
Suppose there are n studies and each study has 2 effect values, then each study is $y_i = (y_{i1}, y_{i2})$, $(i = 1, 2, ..., n)$. Under the setting of the fixed effect model, it is assumed that $y_i$ obeys the binary normal distribution:

$$
\begin{pmatrix}
    y_{i1} \\
    y_{i2}
\end{pmatrix}
\sim \text{MVN}
\left(
\begin{pmatrix}
    \mu_1 \\
    \mu_2
\end{pmatrix},
\begin{pmatrix}
    \sigma_{11}^2 & \rho_i \sigma_{11} \sigma_{12} \\
    \rho_i \sigma_{11} \sigma_{12} & \sigma_{22}^2
\end{pmatrix}
\right)
$$

(1)

where, $\rho_i$ refers to the correlation coefficient between the two effect values in the $i$ study, $\mu = (\mu_1, \mu_2)$ refers to the expectation of the two effect values in the n study, and $\sigma_{ij}^2$ refers to the first effect value in the $i$ study. The variance $S_i = \begin{pmatrix}
    \sigma_{11}^2 & \rho_i \sigma_{11} \sigma_{12} \\
    \rho_i \sigma_{11} \sigma_{12} & \sigma_{22}^2
\end{pmatrix}$ refers to the covariance matrix within the study.

Under the setting of the random effect model, the total variance includes not only the intra-study variance, but also the inter-study variance. Similarly, the total correlation coefficient can also be decomposed into the

$$
\begin{pmatrix}
    y_{i1} \\
    y_{i2}
\end{pmatrix}
\sim \text{MVN}
\left(
\begin{pmatrix}
    \mu_1 \\
    \mu_2
\end{pmatrix},
\begin{pmatrix}
    \sigma_{11}^2 + \tau_j^2 & \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 \\
    \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 & \sigma_{22}^2 + \tau_j^2
\end{pmatrix}
\right)
$$

(4)

At this point, the authors extend the binary form of the above model to multivariate, and get

$$
\begin{pmatrix}
    y_{i1} \\
    y_{i2} \\
    \vdots \\
    y_{ik}
\end{pmatrix}
\sim \text{MVN}
\left(
\begin{pmatrix}
    \mu_1 \\
    \mu_2 \\
    \vdots \\
    \mu_k
\end{pmatrix},
\begin{pmatrix}
    \sigma_{11}^2 + \tau_j^2 & \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 & \cdots & \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 \\
    \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 & \sigma_{22}^2 + \tau_j^2 & \cdots & \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 \\
    \vdots & \cdots & \cdots & \cdots \\
    \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 & \rho_i \sigma_{11} \sigma_{12} + \rho_i \tau_1 \tau_2 & \cdots & \sigma_{kk}^2 + \tau_j^2
\end{pmatrix}
\right)
$$

(5)

In model form, it can be expressed as:

$$
y_i = \mu + \delta_i + e_i
$$

(6)

where, $\delta_i \sim \text{MVN}(0, \Delta), e_i \sim \text{MVN}(0, S_i)$ and $S_i$ are known, and $\Delta$ is unknown. In the fixed-effects meta-analysis model, $\Delta$ does not exist. The heterogeneity between individuals is only due to random sampling errors in the study. The difficulty of the random-effects meta-analysis is to estimate the variance between studies.

(3) Parameter estimation method

For the estimation of the parameters of the meta-analysis model, there are many mature methods to choose from. Two common estimation methods are briefly introduced below, and how they are used to estimate the parameters of the meta-analysis model.

1) Maximum likelihood estimation

Because the model assumes that each study is independent of the other, the model parameters can be estimated by using the method of maximum likelihood estimation, and the likelihood function constructed is as follows:

$$
L = -\frac{1}{2} \sum_{i=1}^{n} \log|\Delta + S_i| - \frac{1}{2} \sum_{i=1}^{n} (y_i - \mu)^T (\Delta + S_i)^{-1} (y_i - \mu)
$$

(7)

Assuming that the effect values of all studies are the same and there are no missing values, the estimated value of $\mu$ can be obtained by solving the maximum value of the likelihood function, and the result is:

$$
\hat{\mu} = \left[\sum_{i=1}^{n} (\Delta + S_i)^{-1}\right]^{-1} [\sum_{i=1}^{n} (\Delta + S_i)^{-1} y_i]
$$

(8)
It can be seen that the required $\mu$ estimate depends on the variance-covariance matrix $\hat{C}$:

$$\hat{C} = \left(\sum_{i=1}^{n} (\Delta + S_i)^{-1}\right)^{-1} \quad (9)$$

Finally, through Newton’s iteration method or Fisher’s score method, iterative until it converges, the authors get the estimates of $\mu$ and $\Delta$. Of course, in general, not all studies have the same effect value index.

At this time, the dimensions of the $\Delta$ and $S_i$ matrices are not the same between studies, and it is impossible to directly calculate the $\mu$ estimate. To solve this problem, when a certain dimension of $y_i$ is missing, the authors can set the variance within the study (that is, the corresponding element in $S_i$) to be large enough to ensure that the effect of the missing effect on the parameter estimation is sufficient.

Restricted maximum likelihood estimation is based on maximum likelihood estimation. There is also a commonly used estimation method, called restricted maximum likelihood estimation (REML), which differs from the maximum likelihood function in the construction. The likelihood function is different. Set

$$A = \begin{pmatrix} -1_p & 1_p & \ldots & 0 & 0 \\ 0 & -1_p & \ldots & 0 & 0 \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & \ldots & -1_p & 1_p \end{pmatrix},$$

and multiply the left and right sides of (6) by $A$ at the same time, and then get away.

$$Ay = A\delta + Ae \quad (10)$$

REML estimation requires that the likelihood function for the maximum value of the solution is:

$$L(\Delta|\bar{y}) \approx \log\left\{ (2\pi)^{-n_p/2} \det[\mathbf{B}]^{-1/2} \exp\left\{ -\frac{1}{2} (\bar{y}^T \mathbf{B}^{-1} \bar{y}) \right\} \right\} \quad (11)$$

According to the idea of two-step estimation, after obtaining the estimated value of $\Delta$, putting it into equation (8) can get the estimated value. The REML method is often used because it is consistent and progressively unbiased in the estimation of the variance components.

**Exercise therapy**

Exercise therapy is a method of performing systemic or local exercise to relieve symptoms or improve function. It is one of the main methods of physical therapy. Classification of exercise therapy Exercise therapy can be divided into different types according to the type of exercise, muscle contraction type and treatment effect.

**Classification by exercise mode**

1. **Passive movement**

   The action by the external force acting on a part of the human body is called passive movement—, which is generally used to maintain normal or increase the range of limited joint movement, prevent muscle atrophy and joint contracture.

2. **Active movement**

   The method of relying on the patient’s own muscle strength to perform exercise is called active exercise. If the patient’s muscle strength is above Level 3, he/she can perform active exercise. Active exercise alone does not provide assistance or resistance, and is mainly used to maintain joint activity, training to enhance muscle strength and endurance, and training to enhance coordination between muscles. There are the following forms of active exercise: 1. When the active exercise muscle strength does not reach Level 3 or above, the physical therapist (PT), the active limb or exercise equipment can help the patient to perform activities. 2. When resistance muscles reach Level 3 or above, in order to enhance the patient’s muscle strength, resistance exercises can be performed. This exercise is effective for strengthening muscle strength and endurance, but should be performed under the correct guidance of a physician. There are two forms of resistance exercise: free-hand resistance and instrument resistance.

**Classification by muscle contraction**

1. **Isometric exercise**

   During isometric exercise, the joints do not move and the muscle length does not change. Isometric resistance training is the fastest way to increase muscle strength. After a lot of experiments and observations, in addition to simple training based on the principle of equal isometric contraction (when the lower limb is fixed in the extended position by plaster, the patient often actively contracts the quadriceps).

2. **Isotonic exercise**

   Isotonic exercise is a training exercise in which muscles are shortened and joint angles are changed during the exercise. For example,
Emotion regulation

Emotion regulation is actually a process in which individuals change their own or other people's emotions through certain strategy management. Emotion regulation is a process in which emotions are managed and adjusted under the action of some strategies and mechanisms. It contains both conscious and controlled adjustments as well as unconscious and automatic adjustments, which can be understood as a continuum from awareness to unconsciousness. Emotion regulation is not just a simple psychological mechanism. It has an important effect on human socialization. Social communication ability is often affected by emotion regulation ability. Children with strong emotion regulation ability often have strong social communication abilities.

Strategies for emotion regulation

Scholars have found that children will use multiple strategies to deal with conflict situations among their peers. The most commonly used emotion regulation strategy is constructive strategy, followed by avoidance and emotion release strategies, and finally destruction strategy. With the increase of age, the emotional adjustment strategies adopted by young children are as follows: children aged 3 years old tend to use emotional release strategies, children aged 4 years old use constructive strategies more, and children aged 5 years old prefer to use avoidance strategies. Specifically, when children aged 4-11 years old are depressed, most of them will mention the strategy of play, or do something fun to make themselves feel better. Studies of some scholars have also obtained consistent results, that is, school-age children already know a lot of ways to regulate negative emotions directly or indirectly. In general, the use of children's emotion regulation strategies varies with age, with more use of constructive strategies and less use of destructive strategies.

Factors influencing emotion regulation

(1) Age and temperament factors

In terms of age, scholars have found that children's emotion regulation does not tend to increase with age. In terms of temperament, scholars abroad have studied the relationship between neurotic personality and extraverted personality and emotion regulation, and found that individuals with high neuroticism experience have more negative emotions than individuals with low neuroticism, and they are less likely to reduce negative emotions; high extraversion individuals experience more positive emotions than individuals with low extraversion, and they are more likely to maintain positive emotions. Researchers further found that in terms of different temperament responsiveness, the higher the children's responsiveness to negative emotions, the more likely they are to cause higher negative emotions such as anger, frustration, and fear, while children who tend to experience negative emotions are regulating their anger. Emotional adjustment strategies can not be used successfully during emotions, which supports the research findings abroad to some extent. That is, the higher the responsiveness to negative emotions, the less successfully they can regulate their emotions and the easier it is to maintain negative emotions.

(2) Family factors

Parent-child relationship has an important influence on the development of children's emotion regulation. The study found that kids and young children learn to regulate their emotions in the interaction with attachment subjects, and that attachment safety is an
important factor that leads to individual differences in mood regulation strategies. If the mother can provide appropriate coping guidance to the child’s anger response, the child can effectively regulate their anger and reduce the apparent problem behavior. Subsequent studies in this area have consistent results: parents give children appropriate guidance for negative emotions (being angry or sad), and their children show less symptoms of depression; mothers’ emotional teaching ideas help control their negative emotions and more flexible and diverse emotion regulation strategies, while effective control of their own negative emotions and the use of more flexible emotional coping strategies will help promote the development of their children’s emotional stability and ability to regulate; developing mothers’ skills to achieve emotional teaching can promote the development of children’s ability to regulate emotions; parents’ punitive and negative responses to children’s emotions will cause children to have a high degree of emotional arousal, and will make children take more avoidance behaviors, unable to understand and reasonably express negative emotions. These findings show that the impact of parents’ responses on children’s emotions and the development of children’s emotion regulation cannot be underestimated, so parents should make appropriate and flexible responses to children’s emotional performance during the child’s growth. In this way, it can promote the good development of children’s ability to regulate emotions.

**Effort adjustment theory**

The nature and development process of emotion regulation especially emphasizes effort control and its role in individual adaptation, and mainly measures effort control in the research process of emotion regulation. Effort control is defined as "paying attention to the effectiveness of execution, including the ability to suppress primary reactions, stimulate secondary reactions, plan, and detect errors". It is a higher-level factor and the most important temperament regulating component. Lower levels of attention concentration, perceptual sensitivity, low-intensity pleasure, and suppression control fall into the category of effort control. Different from excessive control or insufficient control, hard control is regarded as a flexible adjustment process. The control process can be flexibly used to delay or control according to social expectations or personal goals. Therefore, a high level of effort control is related to good regulation and social skills, and is more likely to produce adaptive results, e.g. patience when young children are lining up or being assigned toys. The development of effort control changes significantly with age. A child’s ability to focus his/her attention begins at 8-10 months, and then the effort to control attention becomes stronger and stronger. At 30 months, kids’ attention to execution and efforts to suppress the development of behavior, the ability to control efforts is particularly prominent after the age of 3, and continues to school age. Children’s ability to control efforts is no less than IQ, or even higher than IQ. There are also reports from teachers or parents that children’s ability to control efforts (especially in terms of concentration and suppression of control) is relatively stable when they aged 4-6 years old.

**Self-assessment**

**Definition of self-cognition**

Self-cognition is also called self-awareness by Chinese scholars. There are also many synonyms for self-cognition in China and foreign literature. Among them, self-concept is used most commonly. Studies on self-cognition should originate from self-awareness. In general psychology, self-cognition is used as the self As part of the regulatory system, self-cognition is defined as "the individual’s insight and understanding of himself, including self-observation and self-assessment."

**Definition of self-assessment**

As a component of self-awareness, self-assessment has an important impact on individual psychological development and personality improvement. In general psychology, self-assessment is taken as part of a self-regulating system, and self-assessment is defined as “judgment and evaluation of one’s thoughts, expectations, behaviors, and personality characteristics.” Although the current research on the concept of self-assessment does not reach a unified standard, some scholars define people’s self-assessment from capability and value. If you measure yourself with capability, it means how individuals perceive their ability and influence, and when you measure yourself with value, it means how individuals feel about their character and contribution to society and others.
Combining these two aspects, the "mental structure related to mental health" model defines self-assessment as "the individual’s overall self-assessment, and the evaluation-based self-experience and self-acceptance".

The mechanism of self-cognition processing

With regard to self-cognition, cognitive psychology believes that everyone develops a schema of what they are. Some scholars believe that each person has a unique self-schema, which is a cognitive structure that is established by people's accumulation of their long-term life experience and knowledge. The experience is constantly modified and supplemented, but is very stable once formed. This stable psychological representation guides people to recall the existing information stored in the brain and to select, encode and process new information. Therefore, individuals use diagrams to form judgments or inferences on things, thereby dominating and evaluating their behaviors. In general, the self-schema determines the center of individual information processing, and guides individuals to process and understand new information. When external stimuli are transmitted to the brain through sensory pathways, the brain usually filters and processes information according to the schema, so individuals tend to choose information that is consistent with their schema when selecting information, and ignores information that is different with or unrelated to the schema, ultimately forming their judgment and understanding.

EXPERIMENTS

Experimental method

In this paper, RCT is adopted to study the combined exercise therapy. Finally, the meta-analysis of RCT is used to sort and analyze the obtained data. RCT, that is, the participants are randomly divided into groups, and different interventions are performed in different groups to control the difference in effect.

Participants

The overall random sampling method is adopted. Two public kindergartens in the central and coastal areas are selected to sample 956 kids and 465 valid questionnaires are collected (of which 253 are male and 212 are female). In terms of age distribution, there are relatively many people in the age group of 4 years and 0 months to 4 years and 11 months, and 5 years and 0 months to 5 years and 11 months, accounting for 40.0% and 38.3% respectively; The number of people aged ~ 3 years and 11 months is the least, accounting for 21.7% of the sample group. In terms of gender distribution, there is not much difference between men and women. In the sample, only children accounted for 58.7%, and non-only children accounted for 41.3%.

The situation of the families investigated is random. 59.4% of the kids are cared by mother mainly, 5.4% by father, 18.5% by parents, and 16.8% by grandparents. The major caregivers with a high school education background or below are the most, accounting for 37.2%; followed by those with a college degree, accounting for 32.0%; those with a bachelor’s degree account for 28.6%; those with a master’s degree and above account for only 2.2%. As for the occupation of major caregivers, the proportion of production and transportation equipment operators is the highest, accounting for 30.3%; followed by those engaged in professional and technical occupations (such as law, finance, education, sports, etc.), accounting for 26.7%; commercial service personnel account for 23.7%; the proportion of clerks and related personnel (administration, postal services, security and fire protection, etc.); those working for state agencies, enterprises and institutions are relatively few. The annual household income is basically in the range of 50,000-100,000 RMB Yuan, accounting for 49.2% of the total; followed by those in the range of 3-5 million RMB Yuan, accounting for 19.1%; the proportion of those with an annual household income of 200,000 RMB Yuan is the least, accounting for 4.3%.

Experimental process

Using the RCT method, participants are randomly divided into groups, and treated with combined exercise therapy and general therapy, respectively. Children in the control group are treated with single exercise therapy, and children in the experimental group are treated with combined exercise therapy. In the course of experiment, a personalized exercise plan should be formulated in accordance with the actual situation of the child. The sports items that the child likes can be incorporated into the exercise plan to increase the child's active participation.
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During the exercise, the child’s physical condition must be closely monitored and the exercise intensity controlled. The experimental cycle is one month. After one month, the obtained data is analyzed by multivariate meta-analysis method. SPSS 20.0 is used to represent the measurement data in the study (mean ± SD), and then the T test is used to express the usage of counting data and tested. P<0.05 is considered statistically significant.

DISCUSSION

Analysis before the experiment

Before the experiment begins, the authors need to do a statistical analysis of the children’s emotion regulation ability to ensure the accuracy of the results. The situation of children in the experimental group and the control group is examined. The test results of the specific data of the control group and the experimental group "Children’s Emotion and Regulation Self-Reported Measurement" are shown in Table 1 and Figure 1.

Figure 1. Comparison between the control class and the experimental class before the experiment

As can be seen from Table 1 and Figure 1, there is no significant differences in the three aspects of positive emotion, negative emotion, and emotional control in the combination of RCT and exercise therapy in the control and experimental classes. There is not much difference between the experimental group and the control group before the experiment, making the experiment convincing.

Effects of combined RCT and exercise therapy on children’s positive self-assessment or emotion regulation

Effects of combined RCT and exercise therapy on children’s emotion regulation

After one experimental cycle, the obtained data are analyzed by multivariate meta-analysis and processed using statistical methods to obtain the effect of RCT and combined exercise therapy on children’s positive emotion regulation. The results are shown in Figure 2.

Figure 2. Effects of combined RCT and exercise therapy on children’s emotion regulation

It can be seen from Figure 2 that after an experimental period, the data from "Children's Emotion and Regulation Self-Reporting Measurement" show a comparison. The experimental group has positive emotions P = 0.006, negative emotions P = 0.000, and emotional control P = 0.002 (P <0.05) It can be seen that after the combination of RCT and exercise, children in the experimental group have significantly higher positive emotion and emotional control scores, and negative emotion scores are significantly lower than those in the control group.

Table 1. Comparison of pre-tests between the control class and the experimental class "Children’s Emotion and Regulation Self-Reported Measurement"

|                     | Control group | Experimental group | T value |
|---------------------|---------------|--------------------|---------|
| Measurement of children’s emotion and self-reporting | Positive emotion | 3.726 | 3.4892 | 1.168 |
|                     | Negative emotion | 2.6500 | 2.2768 | 1.885 |
|                     | Emotional control | 3.6719 | 3.3351 | 1.651 |
Effects of combined RCT and exercise therapy on children's self-cognition

After one experimental cycle, the obtained data are analyzed by multi-meta meta-analysis and processed using statistical methods to obtain the effect of RCT and combined exercise therapy on children's positive self-assessment. The results are shown in Figure 3.

Figure 3. The impact of combined RCT and exercise therapy on children's positive self-assessment

It can be seen from Figure 3 that the differences between the two groups in overall self-cognition are very significant, $P<0.001$. The two groups also show differences in various dimensions. The differences in academic self-cognition between the two groups are significant, $P<0.01$. The overall self-cognition of the children in the control group is significantly lower than those in the experimental group, but in the family, there is no significant difference between self-cognition and emotional self-cognition, $P>0.01$.

Impact of combined RCT and exercise therapy on children's positive self-assessment

After one experimental cycle, the obtained data are analyzed by meta-analysis and processed by using statistical methods to obtain the effect of RCT and combined exercise therapy on children's positive self-assessment. The results are shown in Table 2 and Figure 4.

Table 2. Self-assessment and its relationship with each dimension

|                      | Control group M | Control group SD | Control group M | Control group SD | Statistical indicators t | Statistical indicators p |
|----------------------|-----------------|------------------|-----------------|------------------|--------------------------|--------------------------|
| Positive self-assessment | 3.12            | 0.781            | 3.06            | 0.687            | 0.897                    | 0.370                    |
| Negative self-assessment | 3.29            | 0.795            | 3.51            | 0.606            | -3.385                   | 0.001                    |
| Overall self-assessment | 2.99            | 0.534            | 3.13            | 0.481            | -2.747                   | 0.006                    |

As can be seen from Table 2 and Figure 4, the overall self-assessment of the children in the control group is significantly lower than that in the experimental group, and the scores of the two groups in the overall self-assessment are significantly different, $P<0.01$. The results also show that there is also a significant difference in self-denial between the two groups of children, $P<0.01$. The children in the control group are more negative in self-denial than those in the experimental group. However, there is no significant difference between the two groups in self-assured evaluation, $P>0.05$. This results indicate that the combination of RCT and exercise affects the overall self-assessment of children. Compared with the experimental group, the overall self-assessment of the control group is more negative and more likely to produce self-denial.

CONCLUSIONS

Children’s regulation of emotions is of great significance to their growth and the development of the society. Therefore, it has
attracted the attention of the psychological community and certain results in this regard have been achieved. However, there are still some aspects to be further improved. The purpose of this paper is to study the effect of RCT and combined exercise therapy on children’s positive self-assessment or emotion regulation. The authors use randomized controlled experiments to test children with combined exercise therapy. The experimental results are analyzed by meta-analysis.

In order to make the experimental results convincing, the authors adopt the RCT experimental method, and inspect all the participants before the experiment. The results of investigation show that before the experiment, there are no significant differences in the control of three aspects (the positive and negative emotions, emotions, and emotions in the control class and the experimental class), and it facilitates the subsequent implementation of the combined exercise therapy.

The findings of this study show that after RCT is combined with exercise therapy, children in the experimental group have significantly higher positive emotion and emotional control scores, and negative emotion scores are significantly lower than those in the control group. The combination of RCT and exercise affect children’s overall self-assessment. Compared with the experimental group, the self-assessment of the control group is more negative and more likely to produce self-denial. The findings of this paper have a certain enlightening effect to the studies on mental health of children in the future.

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