

## Effectiveness of Physical Exercise on Primary Dysmenorrhea Among Female University Students

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### Abstract

*Primary Dysmenorrhoea is a condition that has attracted attention among the stakeholders in education and health professions. Primary Dysmenorrhea is chronic cyclical pelvic pain associated with menstruation in the absence of an identifiable pathological condition. Dysmenorrhea is one of the most common complaints and gynaecological problem worldwide among young females. Many females use pain killers such as paracetamol and Non-steroidal Anti Inflammatory Drugs (NSAIDS) to treat primary dysmenorrhea. The aim of this study is to investigate effectiveness of physical exercises on primary dysmenorrhea among University female students. The study adopted a descriptive research approach. It involved fifty students who had enrolled for gym at the University and had participated in regular exercise. The control group involved 50 students who had not enrolled for gym. The data was collected through self-administered questionnaires. The findings revealed that majority of the students were aware that exercise treats the symptoms of dysmenorrhea but they continued using painkillers. The study found out that majority of the students would consider exercise as an alternative therapy in treating the symptoms of dysmenorrhea. The study further revealed that the experimental group had late onset of menstruation and they took a longer time to menstruate as compared to controlled group. Overall the results of this study indicated that participating in exercise is a likely alternative approach to reduce the effects of primary dysmenorrhoea symptoms especially pain and improve the quality of life in young females.*

## I. BACKGROUND TO THE STUDY

Primary Dysmenorrhea is chronic cyclical discomfort associated with menstruation in the absence of an identifiable pathological condition (Ozlem, *et al* 2012). According to Esther, *et al* (2016) menstrual pain or dysmenorrhea is the pain in the lower abdomen before or during menstruation. The pain sometimes radiates to the lower back or thigh area and can range from mild to severe. Other symptoms may include nausea, vomiting, loose stools, sweating, and dizziness. Dysmenorrhea is one of the most common discomfort and gynaecological problem worldwide among young females. Marrow (2009) argued that it requires clinical and intensive self-care.

Proctor & Farquhar (2006) studied diagnosis and management of dysmenorrhoea. The study observed that treatments for dysmenorrhoea such as paracetamol, aspirin and non-steroidal anti-inflammatory drugs relieve pain or symptoms by affecting prostaglandin production. Further the study indicated that gonadotropin-releasing hormone antagonists, oral contraceptives or intra-uterine devices can also be used in treatment. Studies have shown that awareness on primary dysmenorrhea helps adolescents to negotiate the condition. A study was carried by Maryam, Zahra, Seyed, Behroz & Mehrdad (2011) who examined self-management in primary Dysmenorrhea among university students. The study observed that health education on dysmenorrhoea leads to remarkable evidences in promoting self-management such as searching for knowledge, seeking assistance, expression of emotions and self- control. In addition, Mohammad and Farzaneh (2002) assessed knowledge, attitudes and behaviour of adolescent girls in suburban districts of Tehran about dysmenorrhea and menstrual hygiene. The findings observed that some religious and cultural restrictions in Tehran hindered adolescents from receiving sufficient and appropriate information regarding. The study also revealed that cramping and mood swings were the major symptoms that accompany primary dysmenorrhea and menstrual hygiene. This caused unhealthy and incorrect behaviour during their menstrual period. Further, Min-Hui, Hsiu-Hung, Su-Chen & I-Ping (2012) examined dysmenorrhoea and self-care behaviours among hospital nurses. The study found out that primary dysmenorrhea prevalence rate was high among the hospital nurses where most of them took analgesics to reduce pain to enhance the work performance. The study recommended that the hospitals need to be provided with a friendly environment and empowerment activities to improve self-care ability and comfort among nurses. In addition, Adesola and Oluwayemisi (2010) examined management of primary dysmenorrhea by school adolescents in ILE-IFE, Nigeria. The study observed that majority of the adolescents had poor knowledge of menstruation, primary dysmenorrhea and its management. Hence, majority of the adolescence used inappropriate drugs for management. The current study revealed that majority of the university students were aware that exercise treats the symptoms of dysmenorrhea. The study observed that the symptoms for primary dysmenorrhea were hot flushes, sleeping difficulties, headache, feeling of depression, diarrhoea, fainting, mood swings, food craving, nausea and abdominal bloating. Further, the study revealed that cramping and mood swings were the

major symptoms that accompany primary dysmenorrhea among university female students.

In the past two decades, the relation between physical activity or exercise and menstrual disorders has significantly been studied. Many findings support the fact that exercise has positive effect on dysmenorrhea while results from a few studies indicated no effect of exercise on primary dysmenorrhea. Studies have shown that physical exercise is beneficial to adolescents with primary dysmenorrhoea. Ann, Caldwell, Angela, Bryan, and Melissa (2011) carried a study on menstrual cycle effects on perceived exertion and pain during exercise among sedentary women. The study observed that cyclic variation is shown to influence rheumatoid arthritis, migraines, irritable bowel syndrome, epilepsy, and even glycaemic control in diabetic women. The study observed that the findings can be used in planning the optimal timing of interventions targeted at increasing exercise behaviour in sedentary women. In addition, Shahnaz, Rahman and Maghsoud (2012) investigated effective of stretching exercises on primary dysmenorrhea in adolescent. The study showed that stretching exercises were effective in pain reduction and intensity as well as reducing painkillers used during the menstrual cycle. Further, Elham, Maryam, Jaleh, Eskandar (2015) studied the effect of an 8-week-flexibility training on primary dysmenorrhea's physical and psychological syndromes in non-athletic girls. The results showed that physical exercise caused a decrease in primary dysmenorrhoea's physical and psychological syndrome among girls. However, Maruf, Nonyelum, Ezenwafor, Moroof, Adeniyi, & Emmanuel (2013) carried out a study on physical activity level associated with primary dysmenorrhea in school adolescents. The findings indicated that physical activity level and adiposity are neither associated with primary dysmenorrhea occurrence nor the intensity of its attendant. This study contradicted the current study which revealed that performing regular exercise reduced the pain intensity.

Different treatments including medical and non-medical remedies such as taking non-steroidal anti-inflammatory drugs (NSAIDs), herbal, dietary therapies, yoga, meditation and acupuncture have been used to treat the symptoms of dysmenorrhea due to its importance. Treatments for dysmenorrhea such as paracetamol, aspirin and non-steroidal anti-inflammatory drugs relieve pain or symptoms by affecting prostaglandin production and their prolonged use is accompanied by adverse effects (Marjoribanks *et al*, 2010). Proctor and Farquhar (2006) studied diagnosis and management of dysmenorrhoea. The study observed that alternative treatments include herbal products, dietary supplements, dietary changes and exercise could also be used in treatment of primary dysmenorrhea. Han-Fu and Yu-Hua (2011) investigated selection and efficacy of self-management strategies for dysmenorrhea in young Taiwanese women. The study found out that paracetamol and Dang-Qui-Shao-Ya-San are the most effective strategies in relieving dysmenorrhea in young Taiwanese women, while other cultural strategies such as brown sugar drinks and ginger tea were also used to control primary dysmenorrhoea. Further, Qiang-Min and Lin (2014) studied the effect of wet needling of myofascial trigger points in abdominal muscles for treatment of primary Dysmenorrhoea. The findings

demonstrated after one year of myofascial trigger points in abdominal muscles with acupuncture and abdominal stretching exercises had produced 100% treatment. Furthermore, all associated symptoms of primary dysmenorrhoea were reduced or disappeared after one year of treatment. This result demonstrates that an approach focusing on myofascial trigger points in abdominal muscles may provide long-term relief of abdominal pain and associated symptoms from primary dysmenorrhoea. In addition, Hiralben and Sijo (2016) studied the effectiveness of dietary ginger v/s active exercise on primary dysmenorrhea among adolescent girls. The results showed that active stretching exercise increased the blood flow and metabolism of the uterus during exercise which may be effective in the reduction of dysmenorrhea symptoms. Moreover, the study observed that dietary ginger is more effective than active exercise among adolescent girls in Primary Dysmenorrhea.

Acupressure is used by the Chinese to produce analgesia which regulates body function. This is done through applying digital pressure in a specified way on designated point on the body to relief pain. Esther, *et al* (2016) studied the effectiveness of acupressure therapy on menstrual pain perception among adolescent girls with primary dysmenorrhea. The results showed that the acupressure therapy is effective in reduction in the severity of menstrual pain. The current study observed that majority of the students would consider exercise as an alternative therapy in treating the symptoms of dysmenorrhea.

## **II. STATEMENT OF THE PROBLEM**

Primary Dysmenorrhea describes recurrent cyclic pain during menstrual periods which may have an enormous negative impact on psychological and physiological aspects. This affects the quality of life and in some cases it may lead to inefficiency in work performance. Primary dysmenorrhea on the other hand can cause physiological problems in some of the females resulting in loneliness and less or inactive participation in different social activities. Severe pain and discomfort cause female students to be absent from school or work. It has a negative impact on academic, sport and social activities of female students. The symptoms associated with Primary dysmenorrhea have led to the abuse of NSAIDS among the females. Healthy reductions of pain and discomfort can result to improved class attendance, participation in social activities as well as reducing stress and loneliness. The study has concentrated on the effectiveness of exercise on dysmenorrhea among university female students. The study further investigated the level of awareness on the effectiveness of exercise therapy on dysmenorrhea as well as how University female students respond to exercise therapy as an alternative therapy.

## **III. OBJECTIVES OF THE STUDY**

The study was guided by the following objectives;

- i.) To find out the level of pain during primary dysmenorrhoea among exercising and non-exercising University female students.
- ii.) To investigate the level of awareness on the effectiveness of exercise therapy on dysmenorrhea among University female students.

- iii.) To find out whether University female students would consider exercise therapy as an alternative therapy to treat dysmenorrhea.

#### **IV. THEORETICAL FRAMEWORK OF THE STUDY**

The study was grounded on the Constitutional theory which explains the aetiology of dysmenorrhea. According to the theory majority of patients who were seeking advice from the doctors were school going girls that engaged in a lot of mental activity and not physical activity. They usually sat for 6 to 7 hours a day in school after which they headed home and sat to study. This led to a sedentary lifestyle that was also observed in several women in factories and offices who sat all day. Such lack of physical activity led to pelvic congestion resulting in dysmenorrhea. The theory focused on non-exercising females or on those that never took part in physical activity. The theory complemented the study since the study focused on the university students who were involved in mental activities and they sat for long hours for lectures. The participants of this study included the exercising and non-exercising groups hence the theory complemented the study.

#### **V. CONCEPTUAL FRAMEWORK**

The conceptual framework shows the relationships between the dependent and independent variables. The independent variables of this study were exercise, level of knowledge and alternative therapy. The dependent variable was pain and symptoms reduction. According to the relationships, if one engaged in exercise, there was likelihood that exercise can treat symptoms of primary dysmenorrhea. Therefore, the respondents could consider exercise as an alternative therapy to other methods of pain reduction. Hence there were likely to reduce the pain induced by dysmenorrhea or positively affect the symptoms of dysmenorrhea.

#### **VI. RESEARCH METHODOLOGY**

The study adopted descriptive research design which incorporated the survey research. This was to enable the researcher to collect the data through questionnaires, interviews and observations. This required the respondents to give a self-report on their opinion on the effectiveness of exercise on dysmenorrhea. In this study the independent variables were exercise, level of knowledge and alternative therapy. The exercises included aerobics, stretching, jogging, weight lifting, swimming and dancing while alternative therapy included soothing pain by warmth and pressure, yoga, meditation, dietary therapy and ignoring the pain. The dependent variables were pain and symptom reduction. The study was carried out among university students. The target population consisted of young female students and women aged between 18 and 25 years which were divided into experimental and control groups. The study focused on the exercising and non-exercising students. The study used convenient sampling and random sampling. The convenient sampling was used for the exercising students and random sampling for non-exercising students. Convenient sampling was used because the chosen female students in the experimental group were the only ones that were available. The data-collection tool employed a customised short form McGill pain questionnaire. It enabled one to measure

the different qualities of the subjective pain experienced using a shorter, less time-consuming version of the McGill pain questionnaire. The research instruments were pre-tested to fifth year University female students who were not included in the study. The questionnaire was then administered to the experimental group and control group.

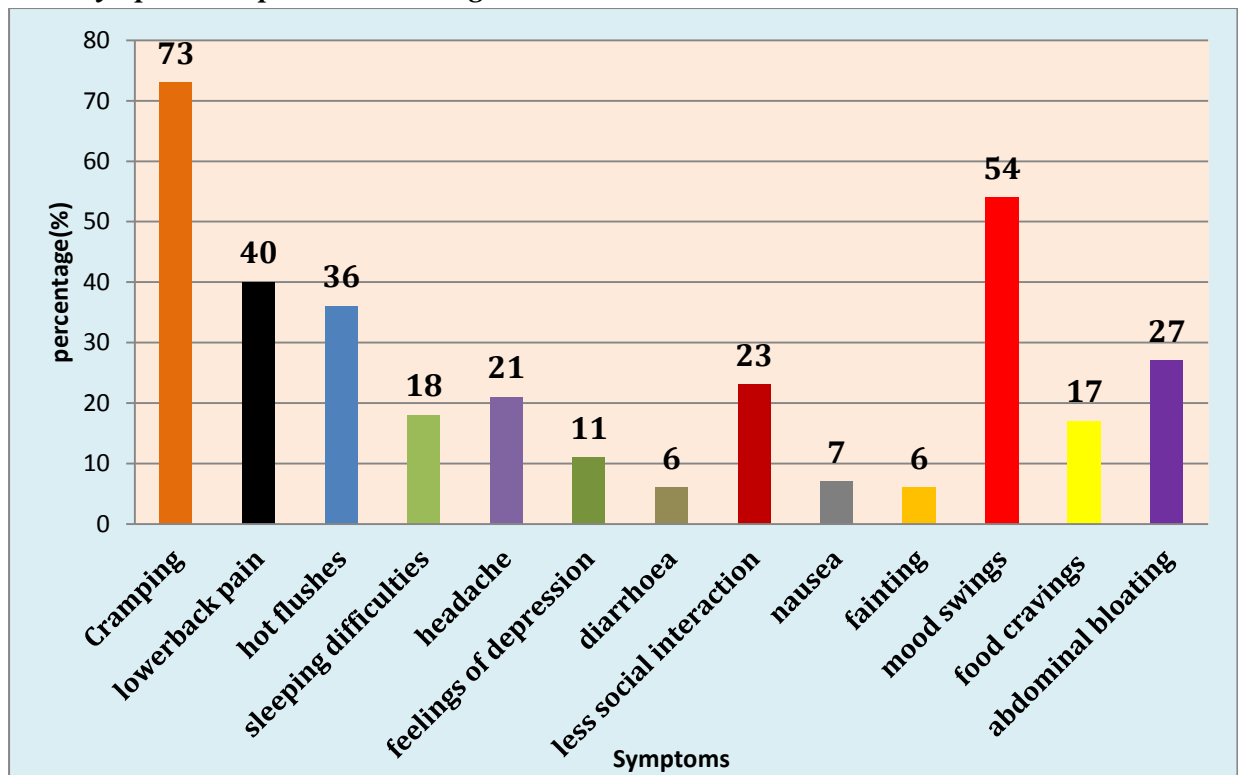
**VII. RESULTS AND DISCUSSIONS**

**7.1 Level of Pain during Primary Dysmenorrhoea among Exercising and Non-exercising University Female Students.**

**7.1.1 Demographic Characteristics of Subjects**

The study showed that the experimental group had a higher mean height compared to the control group. On the other hand the experimental group had a lower body mass index attributed to their low mean weight. The results showed that the experimental group were late maturers as their age of onset of menstruation was later than that of the control group. However the length of menstruation in the experimental group was longer compared to the control group. This finding concurred with Shahnaz, Rahman and Maghsoud (2012) who observed that stretching exercises were effective in pain reduction and intensity as well as reducing painkillers used during the menstrual cycle.

**7.1.2 Symptoms Experienced during Menstrual Flow**



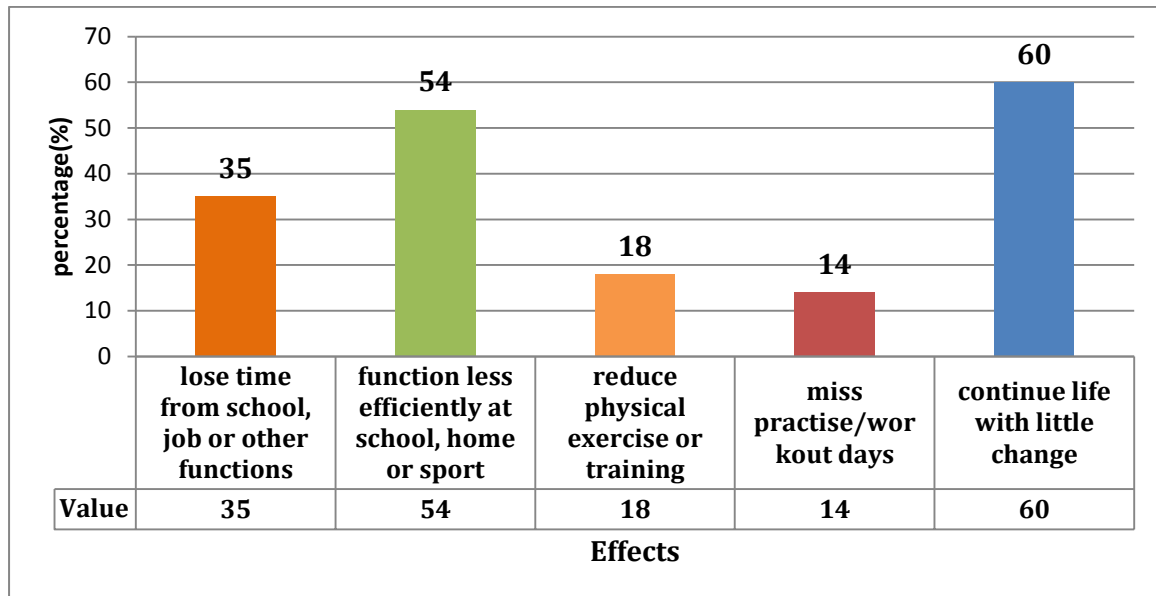
**Figure 1: Symptoms experienced during menstrual flow**

The findings in Figure 1 showed that the most common symptoms associated with dysmenorrhea were cramping, mood swings, lower back pains, hot flushes and abdominal bloating. The study reported that out of the hundred participants that took part in the

study 73% had cramping, 54% mood swings, 40% lower back pains, 36% hot flushes and 27% experienced abdominal bloating. The findings reported that the symptoms that rarely occurred during the menstruation period were 7% nausea, 6% fainting and 6% diarrhoea. This concurred with D’Almeida *et al* (2015) who reported that majority of the respondents had cramping as their main symptom during menstruation.

### 7.1.3 Effects of Dysmenorrhea

Figure 2 presents the effects of dysmenorrhea on University female students.



**Figure 2: Effects of Primary Dysmenorrhea**

The findings in Figure 2 indicated that the most common event that occurred during the menstrual period among University female students was continuing life with little change. The study reported that out of the 100 respondents involved in the study 60% continue life with little change, 54% function less at school, and 35% lose time from school or other function while 18% reduce physical exercise/training. Very few participants about 14% miss practice/work out days. These results concurred with Shahrjerdi and Hoseini (2010) who reported that majority of the respondents continued life with little change during menstruation.

### 7.1.4 Strategies of Symptom/pain Reduction during Primary Dysmenorrhea

The study indicated that the most used strategy of pain reduction was the use of pain medication with 84% of the respondents claiming to use it while 65% of the respondents reported they used exercise. On the other hand, very few participants about 2% reported that they used meditation while 6% of the respondents indicated they used yoga. The study also reported that 43% of the respondents soothed the pain by hugging a warm water bottle while 18% ignored the pain. This concurred with Shahnaz, Rahman and Maghsoud (2012) & Majoribanks et al, (2010) who reported that majority of the respondents used pain medication.

### **7.1.5 Types of Exercises Performed by Female Students Attending the Gym**

The study observed that the most performed exercises for students who attended gym were aerobics and stretching. The study also reported that 60% of the respondents took part in jogging while 30% of the participants took part in swimming. The findings indicated that only 20% and 10% took part in weight lifting and dancing respectively. This concurred with Karampour and Khoshnam (2012), Elham et al (2015) who reported that stretching exercises and aerobics played a significant role in reducing pain among the experimental group.

### **7.2 Level of Knowledge and Awareness of Effectiveness of Exercise**

The study demonstrated that majority of the participants had adequate knowledge that exercise treats the symptoms of dysmenorrhea as 82% of the respondents reported that they were aware that exercise treated the symptoms while 18 % reported that they were not aware that exercise would treat the symptom associated with dysmenorrhea. On the other hand, the findings showed that 63% of the respondents had used exercise with an aim of reducing pain induced by menstruation while 37% of the participants had never used exercise with an aim of reducing menstrual pain. The study also reported that 58% of the respondents thought that exercise affected their menstrual symptoms by reducing the symptoms while 42% of the respondents thought that it doesn't affect the symptoms as the symptoms remained the same. The results showed that majority of the participants (76%) would prefer exercise to other methods of pain reduction during their menstrual period. This concurred with Gbiri (2003) who reported that majority of the respondents had adequate knowledge of the therapeutics effects of exercise on primary dysmenorrhea. The readiness to participate in exercise to relieve symptoms of primary dysmenorrhea was also high among the respondents. The current study contradicted Adesola & Oluwayemisi (2010) who observed that majority of the adolescents had poor knowledge of menstruation, primary dysmenorrhea and its management.

#### **7.2.1 Medical and Dietary Intervention**

The study indicated that 18% of the students that took part in the study sought help from a medical practitioner about their menstrual related symptoms while 82% did not seek advice from a medical practitioner. The study also reported that 84% of the participants claimed they had used medicines to treat the symptoms of dysmenorrhea. These included the prescribed and over the counter medication .On the other hand, only 6% of the respondents claimed to use food supplements to prevent them from getting this pain while 94% reported to not using any food supplements to treat the pain. This concurred with Han-Fu and Yu-Hua (2011), (Majoribanks *et al.* (2010) who reported that majority of the respondents used medication in relieving primary dysmenorrhoea.

### **7.3 Exercises as an Alternative Therapy in Primary Dysmenorrhea**

According to McGill pain questionnaire the study showed a significant difference between the exercising and the non-exercising group in relation to the pain rating index. The exercising group scored a mean of 31.0 out of 45 points and the non-exercising group scored a mean of 36.9 out of 45 points. The findings from the Visual analogue



scale (VAS) indicated a significant reduction in pain. From a total of ten points, the exercising had a mean of 5.7 points while the non-exercising had a mean of 6.5. On the other hand, findings from the present pain intensity indicated a significant slight reduction in pain levels in the exercising group compared to the non-exercising where they scored 3.2 and 3.5 points out of five respectively. The three scales of the McGill pain questionnaire indicated that the total amount of pain reduction was more in the experimental group compared to the control group. This concurred with (Mahvash *et al.*, Shahnaz *et al.* Ozlem *et al.* (2012) Elham *et al.* (2015) who reported that physical exercise caused a decrease of pain intensity in primary dysmenorrhoea. The current study contradicted the findings by Hiralben and Sijo (2016) who observed that dietary ginger is more effective than active exercise among adolescent girls in treating Primary Dysmenorrhea. In addition, Maruf *et al.* (2013) reported that physical activity level and adiposity are neither associated with primary dysmenorrhea occurrence nor the intensity of its attendant.

## VIII. CONCLUSION

The study further revealed that the experimental group had late onset of menstruation and they took a longer time to menstruate as compared to controlled group. The findings showed that physical exercise reduced the pain level induced by primary dysmenorrhea. The findings revealed that majority of the students were aware that exercise treats the symptoms of dysmenorrhea. The study also revealed that cramping and mood swings were the major symptoms that accompany dysmenorrhea. The study observed that pain medication/pain killers, exercise and soothing the pain by warmth and pressure such as hugging a hot water bottle were among the most used strategies of pain reduction. Further, the study showed that aerobics and stretching were among the most performed exercises by the experimental group. The study revealed that very few female students use dietary supplements to prevent pain during menstruation. The results revealed that performing regular exercise reduced the total and present pain intensity when compared to control group. The study found out that majority of the students would consider exercise as an alternative therapy in treating the symptoms of dysmenorrhea. Overall the results of this study indicated that participating in exercise is a likely approach to reduce the effects of dysmenorrhoea symptoms especially pain and improve the quality of life in young females. The study recommended that females should also be encouraged to consider exercise as an alternative therapy. The government and learning institution should provide awareness on the effectiveness of exercise on dysmenorrhea. The national and the county government should provide enough facilities for the females to perform exercise.

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