

## INTISARI

### HUBUNGAN PERUBAHAN KAPASITAS FUNGSIONAL DENGAN PERUBAHAN KADAR C-REACTIVE PROTEIN PASKA LATIHAN AEROBIK DAN RESISTENSI PADA PASIEN KANKER PAYUDARA NON METASTASIS DI RSUP DR. SARDJITO

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#### Latar Belakang

Inflamasi kronik yang dinilai dari kadar C-Reactive Protein (CRP) memiliki peran dalam mortalitas pasien kanker payudara. Penelitian menyebutkan intervensi aktivitas fisik akan menurunkan kadar CRP. Kendati demikian, data berkaitan hal tersebut di Indonesia belum diketahui. Penelitian ini bertujuan untuk mengetahui hubungan perubahan kapasitas fungsional dengan perubahan kadar CRP sesudah latihan aerobik dan resistensi selama 12 minggu.

#### Metode Penelitian

Penelitian ini merupakan penelitian *cross sectional* dengan melibatkan 36 subjek. Intervensi aktivitas fisik berupa latihan aerobik dan resistensi dilakukan selama 12 minggu di rumah. Kapasitas fungsional dinilai menggunakan *treadmill* metode Bruce modifikasi. Pengukuran kadar CRP dari sampel darah menggunakan metode ELISA. Analisis statistik menggunakan *Wilcoxon*, *receiver operating characteristics* (ROC), uji korelasi *Spearman* dan *Chi Square*. Hasil dinyatakan bermakna secara statistik bila nilai  $p < 0,05$ .

#### Hasil Penelitian

Sebanyak 36 subjek bersedia dilakukan pengambilan data dasar dan sampel darah serta menjalani intervensi selama 12 minggu. Selama perjalanan penelitian, terdapat 2 subjek yang dieksklusi. Kadar CRP paska intervensi meningkat (0,13 mg/L) tetapi perbedaannya tidak bermakna secara signifikan ( $p=0,122$ ). Nilai kapasitas fungsional mengalami peningkatan yang bermakna spesifik ( $p=0,047$ ) sebesar 0,65 MET paska intervensi. Analisa ROC menunjukkan *cutoff*  $\Delta$  CRP pada 0,085 mg/L. Subjek dengan perubahan kadar CRP  $\geq 0,085$  sebanyak 72,2% tidak mengalami peningkatan nilai MET, namun tidak menunjukkan hubungan yang signifikan terhadap perubahan kapasitas fungsional ( $p=0,141$ ).

#### Kesimpulan

Peningkatan kapasitas fungsional tidak memiliki hubungan terhadap perubahan C-Reactive Protein paska latihan aerobik dan resistensi selama 12 minggu pada pasien kanker payudara non metastasis di RSUP dr.Sardjito.

**Kata Kunci:** C-Reactive Protein, Aktivitas fisik, Kanker Payudara.

## ABSTRACT

### RELATIONSHIP BETWEEN CHANGES IN FUNCTIONAL CAPACITY AND C-REACTIVE PROTEIN LEVELS AFTER AEROBIC AND RESISTANCE EXERCISE IN NON-METASTATIC BREAST CANCER PATIENTS AT RSUP DR. SARDJITO

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#### Background

Chronic inflammation, as measured by C-Reactive Protein (CRP) levels, plays a role in the mortality of breast cancer patients. Studies have suggested that physical activity interventions can reduce CRP levels. However, data related to this in Indonesia remains unknown. This study aims to determine the relationship between changes in functional capacity and CRP levels following 12 weeks of aerobic and resistance exercise.

#### Methods

This was a cross-sectional study involving 36 subjects. Physical activity interventions consisting of aerobic and resistance exercises were performed at home for 12 weeks. CRP levels were measured from blood samples using the ELISA method. Statistical analysis included Wilcoxon, Spearman correlation, and Chi-Square tests. Results were considered statistically significant if  $p < 0.05$ .

#### Results

A total of 36 subjects participated in the baseline data collection and blood sampling and completed the 12-week intervention. Two subjects were excluded during the study. Post-intervention CRP levels increased (0.13 mg/L), but the difference was not statistically significant ( $p=0.122$ ). Functional capacity significantly improved ( $p=0.047$ ), with an increase of 0.65 MET after the intervention. ROC analysis showed a  $\Delta$  CRP cutoff of 0.085 mg/L. Subjects with CRP changes  $\geq 0.085$  mg/L (72.2%) did not experience an increase in MET values, but no significant relationship was found between CRP changes and functional capacity improvement ( $p=0.141$ ).

#### Conclusion

Improvements in functional capacity are not associated with changes in C-Reactive Protein levels following 12 weeks of aerobic and resistance exercise in non-metastatic breast cancer patients at RSUP Dr. Sardjito.

**Keywords:** C-Reactive Protein, Physical Activity, Breast Cancer.