

**Psychological Factors in Chronic Pain Patients  
Waiting for Motor Cortex Stimulation**

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**Aim of this study was to evaluate if neurosurgical motor-cortex stimulation produce variations in personality traits, as assessed by Minnesota Multiphasic Personality Inventory 2 (MMPI-2) in functional chronic pain syndrome (CPS) subjects. Anxiety and Depression levels were evaluated by Clinical Depression Questionnaire (IPAT-CDQ) and Anxiety Scale Questionnaire (IPAT-ASQ).**

# Chronic Pain Syndromes and Psychiatric comorbidity

*Recent studies describe the different typologies of the pain syndromes in a unique frame of functional pain. In this perspective chronic pain syndrome is seen primarily as result of a lowering of the threshold to nociceptive inputs due to an alteration of central nervous processing.*

# Chronic Pain Syndromes and Psychiatric comorbidity

McWilliams, Cox, Enns, 2003

In a national representative sampling significant positive links were found between a chronic pain condition and psychiatric disorders

**(mood disorders, anxiety disorders, panic disorders and post-traumatic stress disorders).**

Notwithstanding these links, the presence of a single psychiatric disorder was not significantly associated with pain-related disability, but the presence of multiple psychiatric disorders was significantly associated with increased pain-related disability.

# **Chronic Pain Syndromes and Psychiatric comorbidity**

**Bensenor, Tofoli, Andrade, 2003**

**Patients with headache show a high incidence of depressive episodes, dysthymia and generalised anxiety disorder.**

## **Chronic Pain Syndromes and Psychiatric comorbidity**

**Sansone, Whitecar, Meier, Murry, 2001.**  
**In a sample of 17 patients with various pain syndromes the 25% of the patients was affected by borderline personality disorder.**

## **The personality of subjects with chronic pain syndrome**

- **Monsen, Havik, 2001.**
- **Slesinger, Archer, Duane, 2002.**
- **Karakurum, Soylu, Karatas, Giray, Tan, Arlier, Benli, 2004.**

**In chronic pain syndrome patients clinical scales of Minnesota Multiphasic Personality Inventory 2 (MMPI-2) show high scores for Hysteria, Hypochondriasis and Depression also in patients without actual psychiatric disorders.**

# The personality of subjects with chronic pain syndrome

## •Dersh, Polatin, Gatchel, 2002

The strong association between chronic pain syndrome and alterations of the personality of the patients, supported a theoretical model, the diathesis-stress model, where the pre-existing personality of the patients is exacerbated by stress of the chronic pain resulting in diagnosable psychopathology.

## •Applegate, Keefe, Siegler, Bradley, McKee, Cooper, Riordan, 2005

A recent perspective longitudinal study confirms this theoretical model on a large sample of 2332 students followed for thirty years. High scores of Masculinity / Femininity in males, Paranoia in females, Hypochondriasis and Hysteria in both, measured by MMPI, predicted increases in number of chronic pain syndromes during the following thirty years.

# Clinical implications of psychiatric comorbidity

- Psychiatric disorders often go undetected
- Coexisting disorders are related to poorer treatment outcomes
- Comorbid subjects experience higher levels of disability
- Comorbid subjects show lower pain threshold and tolerance

## Hypotheses

- ✓ In order to test whether chronic pain patients show a specific pattern of personality we compared a chronic pain syndrome group with a acute pain patients group.
- ✓ Secondary, in order to test whether a treatment of Epidural Motor Cortex Stimulation produce a significant variation of personality pattern in chronic benign pain patients, we retested these subjects after surgical treatment.
- ✓ In the end, we compared the post-test chronic pain group with the acute pain group, in order to evaluate if outcome of the treatment should have reduced the difference in personality pattern of the two groups.

## Materials and Methods

- Sample Seven pharmaco-resistant patients (5 males and 2 females; mean age: 54 years sd: 14 years) affected by functional chronic pain syndrome (experimental group) participated to present study. They showed clinical requirements for Epidural Motor-Cortex Stimulation. Moreover they were free from psychiatric disorders previously diagnosed. Four of the seven patients were retested.
- Control Group Six patients (matched for age and gender) affected by pain lasting less than six months and related to identified cause, five for discal hernia and one for POS, were chosen like control group. All the thirteen patients were admitted at the Neurosurgery Department
- Protocol: Clinical Interview, Minnesota Multiphasic Personality Inventory 2 (MMPI-2), Clinical Depression Questionnaire (IPAT-CDQ) and Anxiety Scale Questionnaire (IPAT-ASQ) in order to measure personality traits, anxiety and depression levels. After this evaluation the subjects underwent transcranial epidural electrical stimulation over the cerebral motor cortex. The experimental design included a pre-post treatment assessment.
- Data Analysis ANOVA (factorial and repeated measures F Fisher Test) was used to test the hypothesis.

## Results

Three graphs are reported in order to test the three points of the hypotheses.

# MMPI 2 scores

## legenda

### ■ Ordinates:

### ■ Scores

### ■ Abscissae:

- ◆ K Correction
- ◆ L Lie
- ◆ F Frequency

### ■ Clinical Scales:

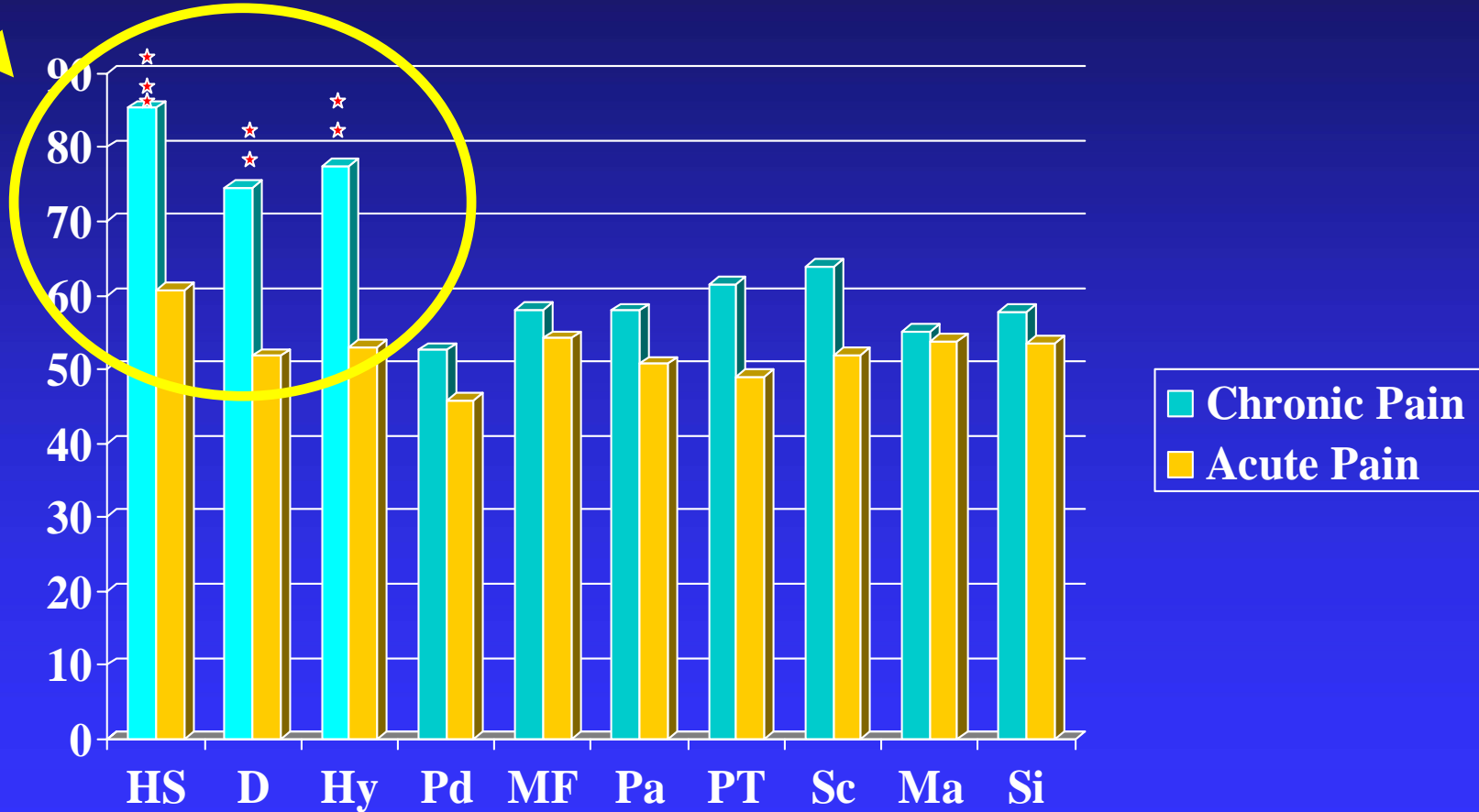
- ◆ Hs Hypochondriasis
- ◆ D Depression
- ◆ Hy Hysteria
- ◆ Pd Psychopathic deviate
- ◆ MF Masculinity-Femininity
- ◆ Pa Paranoia
- ◆ Pt Psychasthenia
- ◆ Sc Schizophrenia
- ◆ Ma Hypomania
- ◆ Si Social Introversion

# Results

## Graph 1

### MMPI Clinical Scales

### Chronic Pain Patients vs Acute Pain Patients



\* \* P < .01

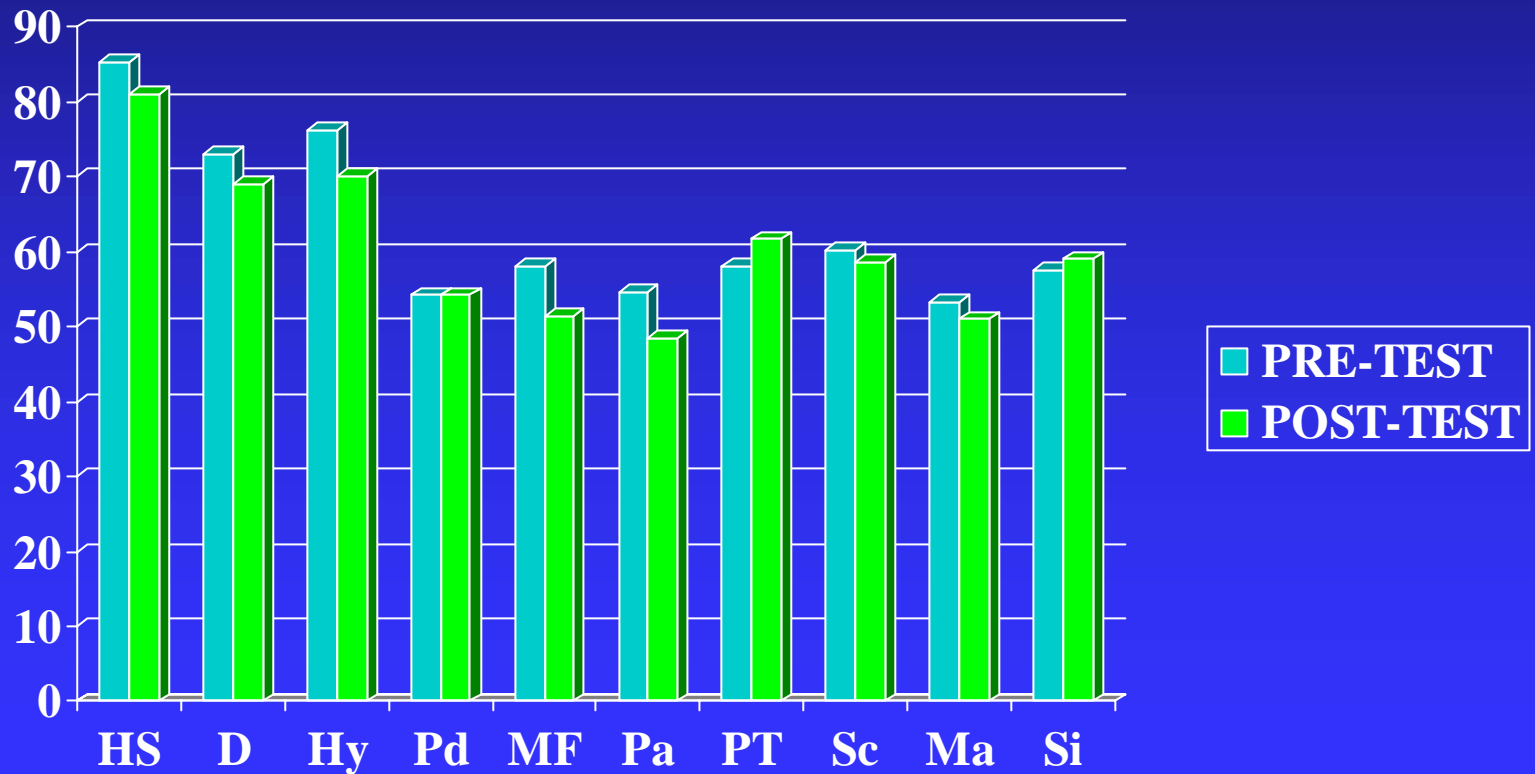
# Results

## Graph 2

MMPI Clinical Scales

Chronic Pain Patients

PRE vs POST Comparison

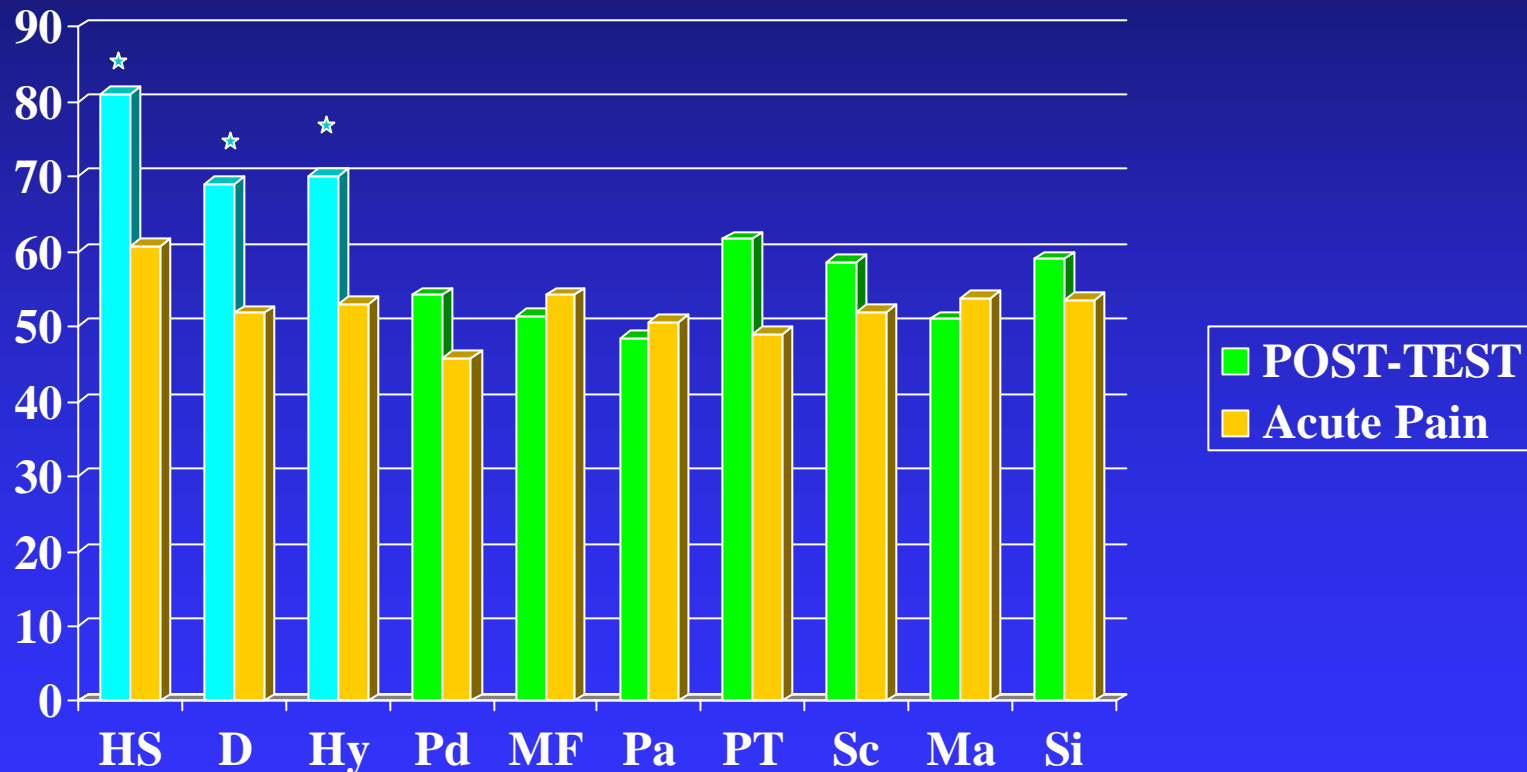


# Results

## Graph 3

### MMPI Clinical Scales

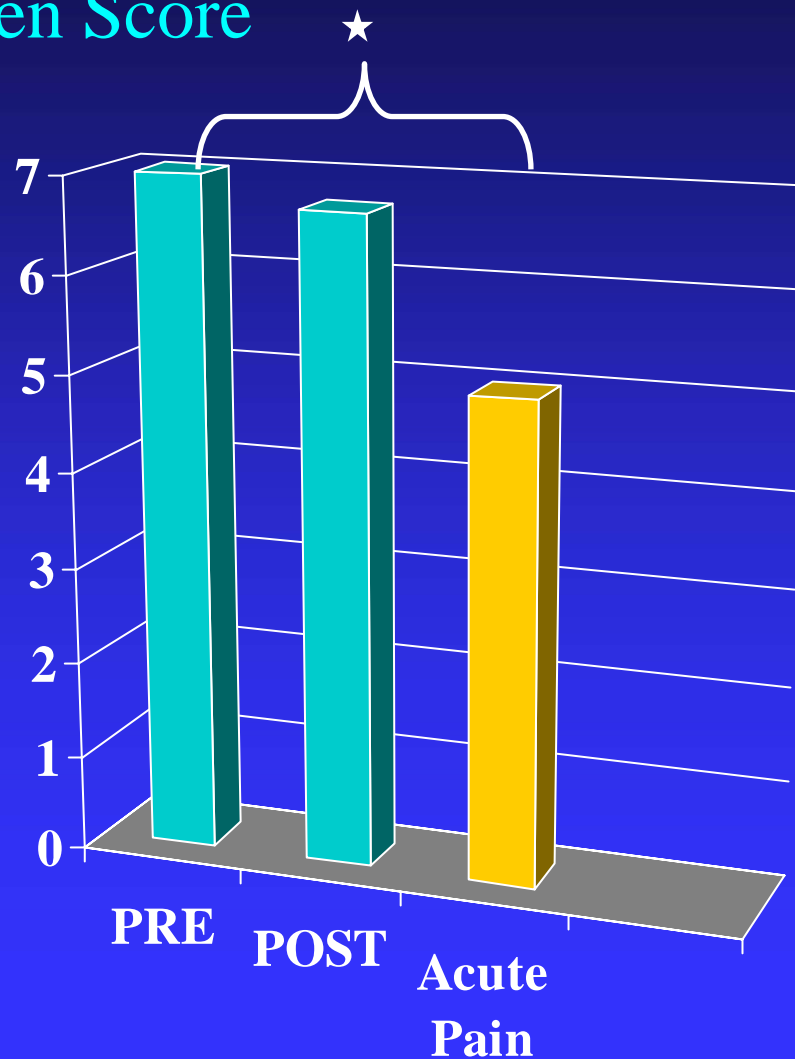
### Chronic Pain Post-test vs Acute Pain Patients



☆ P < .05

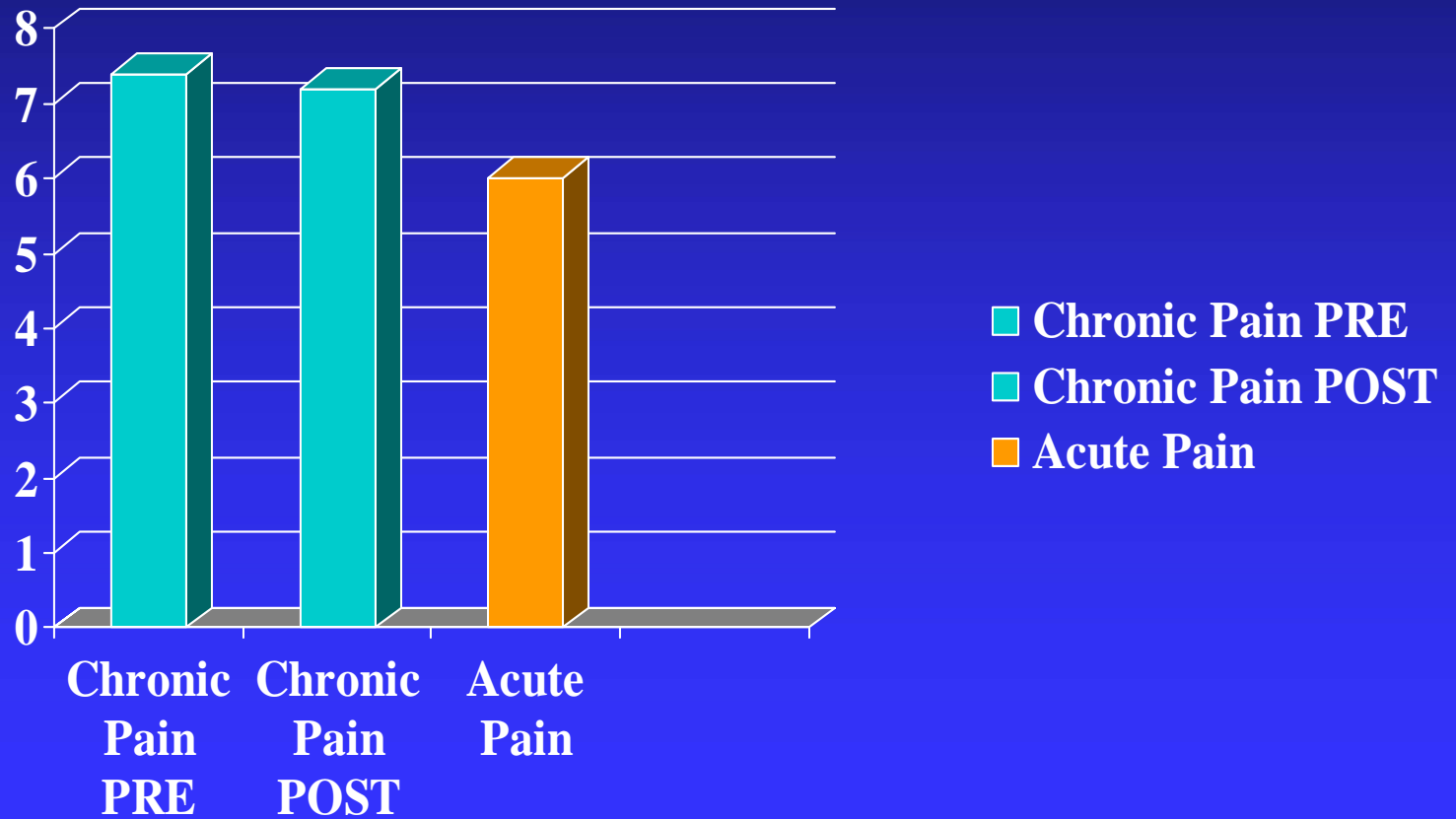
# IPAT Anxiety Scale Questionnaire

## Standard Ten Score



# IPAT CDQ

Clinical Depression Questionnaire  
Standard Ten Score



# Discussion

The comparison between the subjects with chronic pain and the subjects with acute pain during the clinical assessment phase shows:

significantly higher anxiety levels in experimental group.

Depression, measured by CDQ test, was not significantly different;

our subjects with chronic pain syndrome obtain, to clinical scales of MMPI-2, significantly higher scores for Hypochondriasis, Depression and Hysteria scales showing a frame analogous to others samples with functional pain reported in literature.

Moreover the observed scores were higher than pathological cut-off for Italian population. Lowering of clinical MMPI-2 and anxiety scales demonstrates that the treatment produces a small but measurable effect. After the treatment the difference between the two groups becoming less significant.

The chronic pain condition seems to be profoundly related to personality traits of the subjects and to anxiety and depression levels in the pathological range also when a clear psychiatric condition is absent. Notwithstanding the treatment seems to produce some changes, the personality pattern of chronic pain patients seems to be relatively stable.

## Conclusions

- These results are in agreement with previous studies (Wittengl & Coll., 1999).
- Maladaptive personality traits demonstrated less change from pre- to post- treatment than categorical measures.