

Behavioral Medicine for Healthy
Behaviors: 40 years of Progress.

Seminar in honour of
KG Gøtestam
June 12th-13th, 2008

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My oldest sport poem

Better to hunt in the fields
For health unbought.
Than pay the doctor
For nauseous draught.
For cure the wise
On exercise depend.

John Dryden, 17th century

The body in psychiatry: Discipline, recreation or treatment?

Moral treatment (19th-20th century)

- Asylums were established on farms. Farming work was an important ingredient in treatment. Fresh air and high morals. Training patients to develop regular habits and self control.
- Some started to question this practice: Was this therapy, or exploitation of poor people as cheap labour force?
- Gradually farming closed down.

Recreation og rehabilitation

- 1940: Physical activity as recreational therapy
- 1960: First review article on exercise as treatment for mental disorders
- 1970: Exercise and mental health becomes a research field
- Animal assisted therapy and therapeutic gardening become research fields

Physical activity beneficial for somatic health

- Hypertension
- Overweight
- Diabetes
- Metabolic syndrome
- Atherosclerosis
- Cancer, some forms
- Osteoporosis
- Muscular-skeletal disorders

General psychological effects associated with exercise

- Well being
- Reduced fatigue
- Improved sleep
- Creative thinking
- Improved self esteem
- Improved relation to the body
- Experience of mastery

Can exercise prevent mental disorders ?

- Epidemiological studies
 - Cross- sectional designs
 - Longitudinal designs
- Physically active individuals have reduced tendency to develop
 - Depression
 - Dementia

Exercise as treatment for mental disorders: State of the art.

- Depression ***
- Anxiety Disorders
 - Panic Disorder**
 - Generalized Anxiety Disorder *
- Alcohol abuse/dependence *
- Eating Disorders, normal- og overweight patients**
- Schizophrenia *
- Conversion disorder*
- Senile dementia**

Exercise as treatment for other disorders

- Chronic fatigue syndrome**
- Fibromyalgia**
- Chronic pain*
- Burnout
- Cancer survivors (fatigue)**

Negative effects following excessive exercise

- Increase in risk of eating disorders
- Maintenance of eating disorders
- Anorexia for men: Muscle dysmorphia/megarexia
- Exercise dependence
- Compulsive exercise
- Staleness due to overtraining

Randomized exercise intervention studies in clinical depression

- More effective than placebo
- Not significantly different from various forms of psychotherapy
- Not significantly different from antidepressive medication
- Effective in nonresponders/partial responds to medication
- No good studies in children/adolescents
- No good studies in bipolar disorder

Comparing various forms of exercise

- 4 studies
 - No significant differences between various forms of exercise

The dose-response issue

(Dunn et al. 2005)

- Moderate aerobic exercise (17.5 kcal/kg/week) more effective than low intensity exercise (7 kcal/kg.week) and placebo
- Necessary dose according to international guidelines: 30 minutes of exercise most days of the week at an intensity similar to a brisk walk

Intensive endurance training

(Knubben et al., 2007)

- Daily aerobic exercise, walking at treadmill at 80% of max compared to light strengthening exercises (placebo) for ten days in major depression:
Aerobic exercise better than placebo

Exercise intervention and anxiety states

- State anxiety: Consistent reductions during and following exercise intervention, usually lasting $\frac{1}{2}$ -2 hours
- Trait anxiety: Less consistent findings

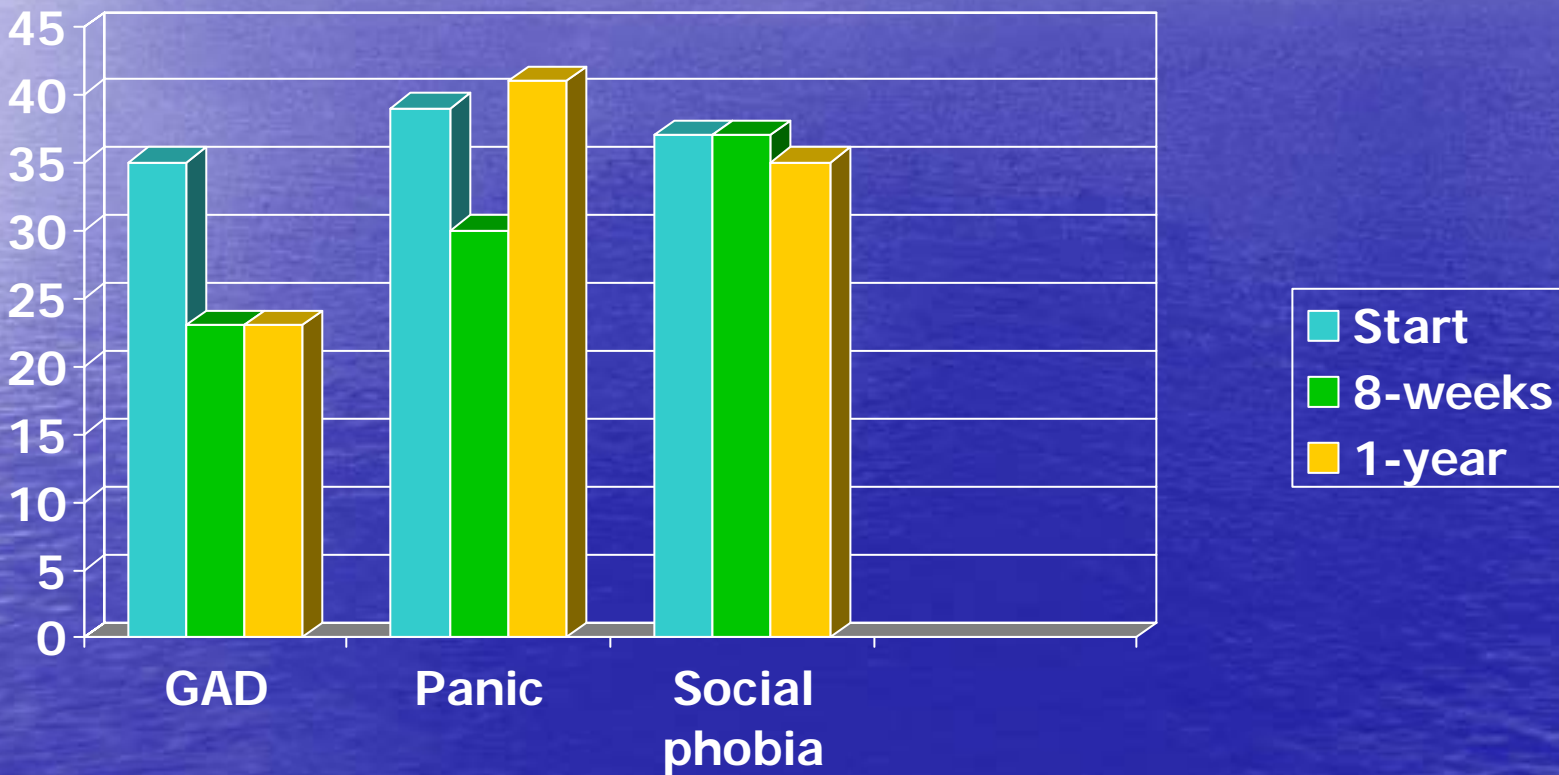
DSM-IV anxiety disorders

- Panic disorder**
- Agoraphobia*
- Social phobia
- Obsessive compulsive disorder
- Posttraumatic stress disorder
- Specific phobias
- Generalized anxiety disorder*

Exercise intervention in anxiety disorders

- Combining running and exposure in agoraphobia
 - 8 patients had good response
 - No control group or follow-up
 - ❖ (Orwin, 1981)

Exercise intervention in anxiety disorders (Martinsen et al, 1989)



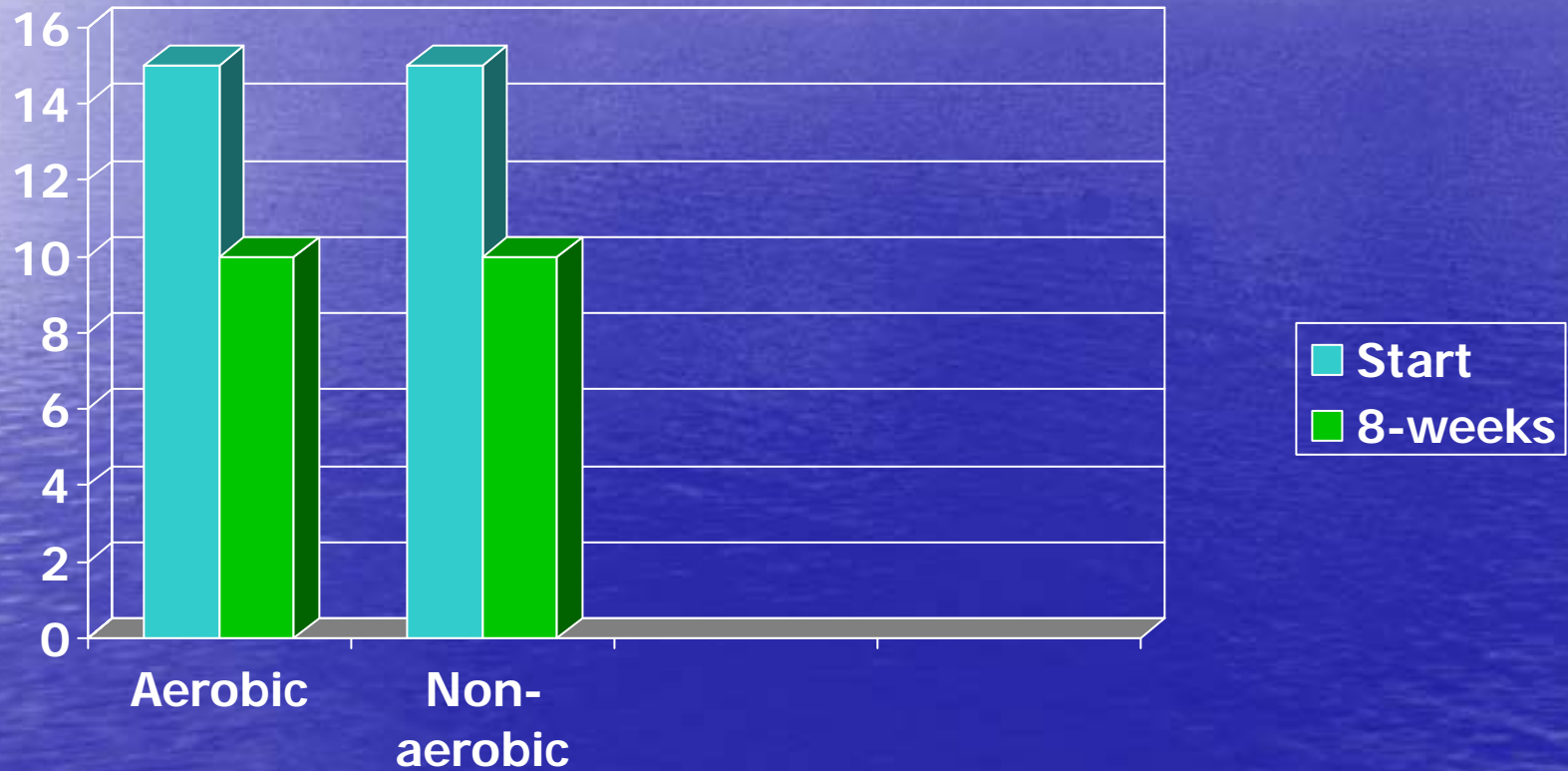
Randomized controlled trials

- 1 study comparing exercise, clomipramine and placebo in panic disorder

(Broochs et al, 1998)

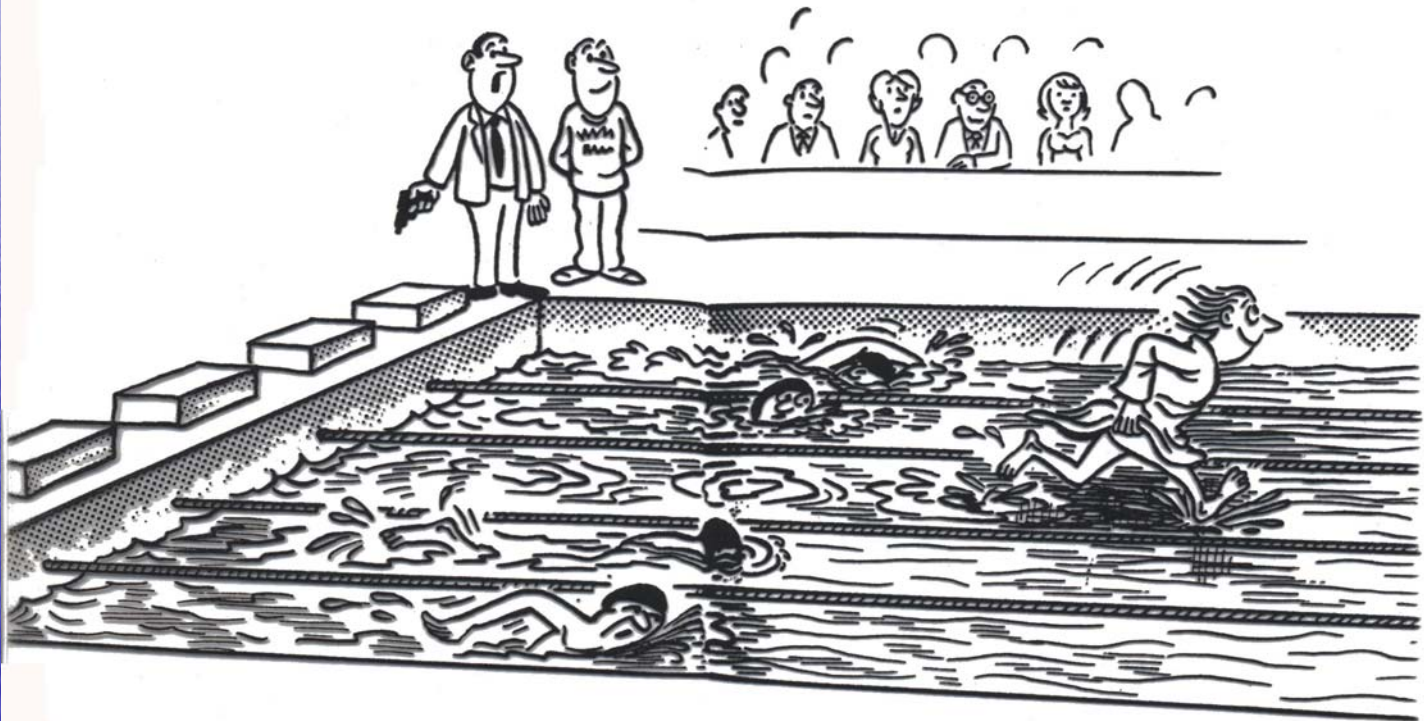
- Exercise superior to placebo
- Clomipramine more effective than exercise

Comparing aerobic vs. nonaerobic exercise in panic disorder (Martinsen et al, 1989)

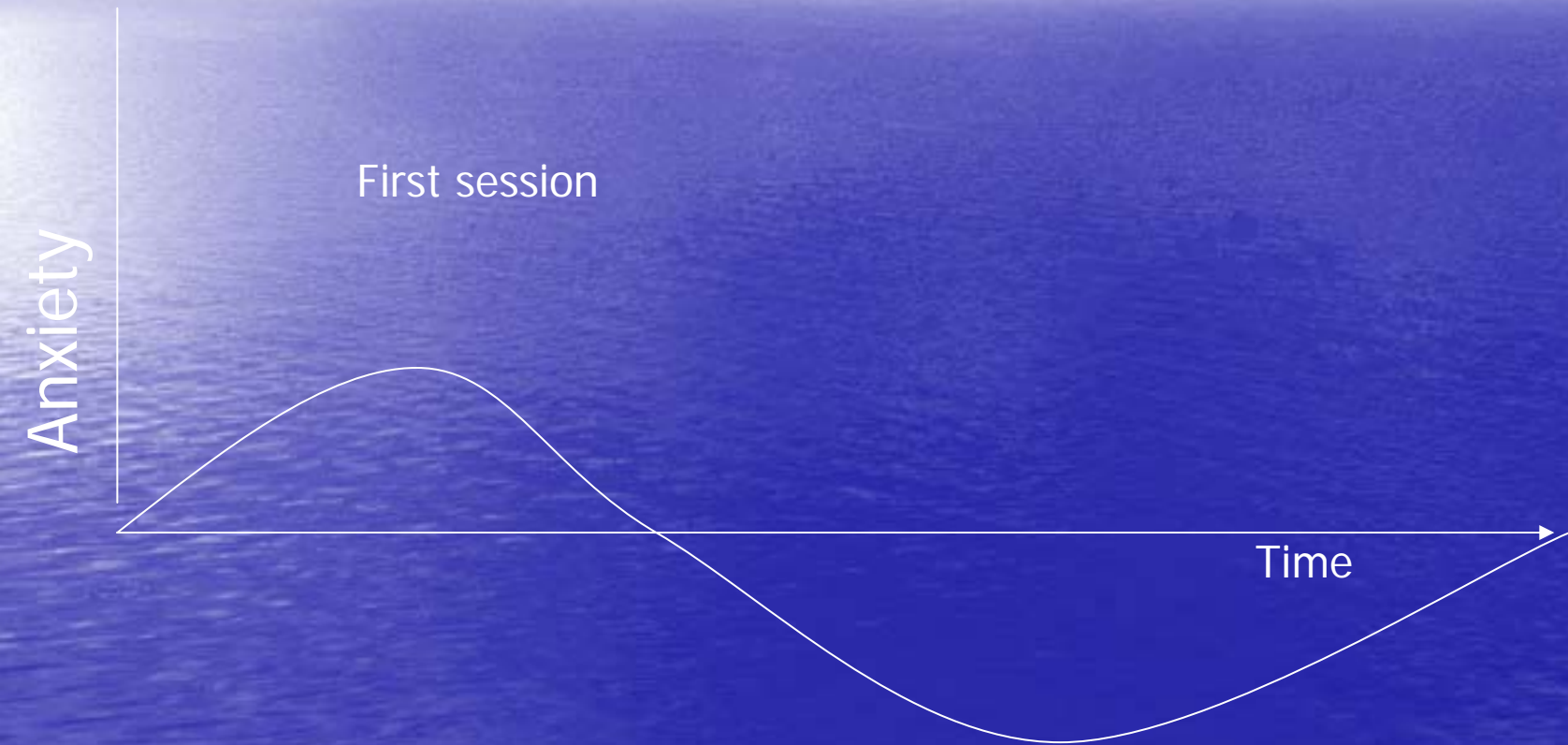


Swimming

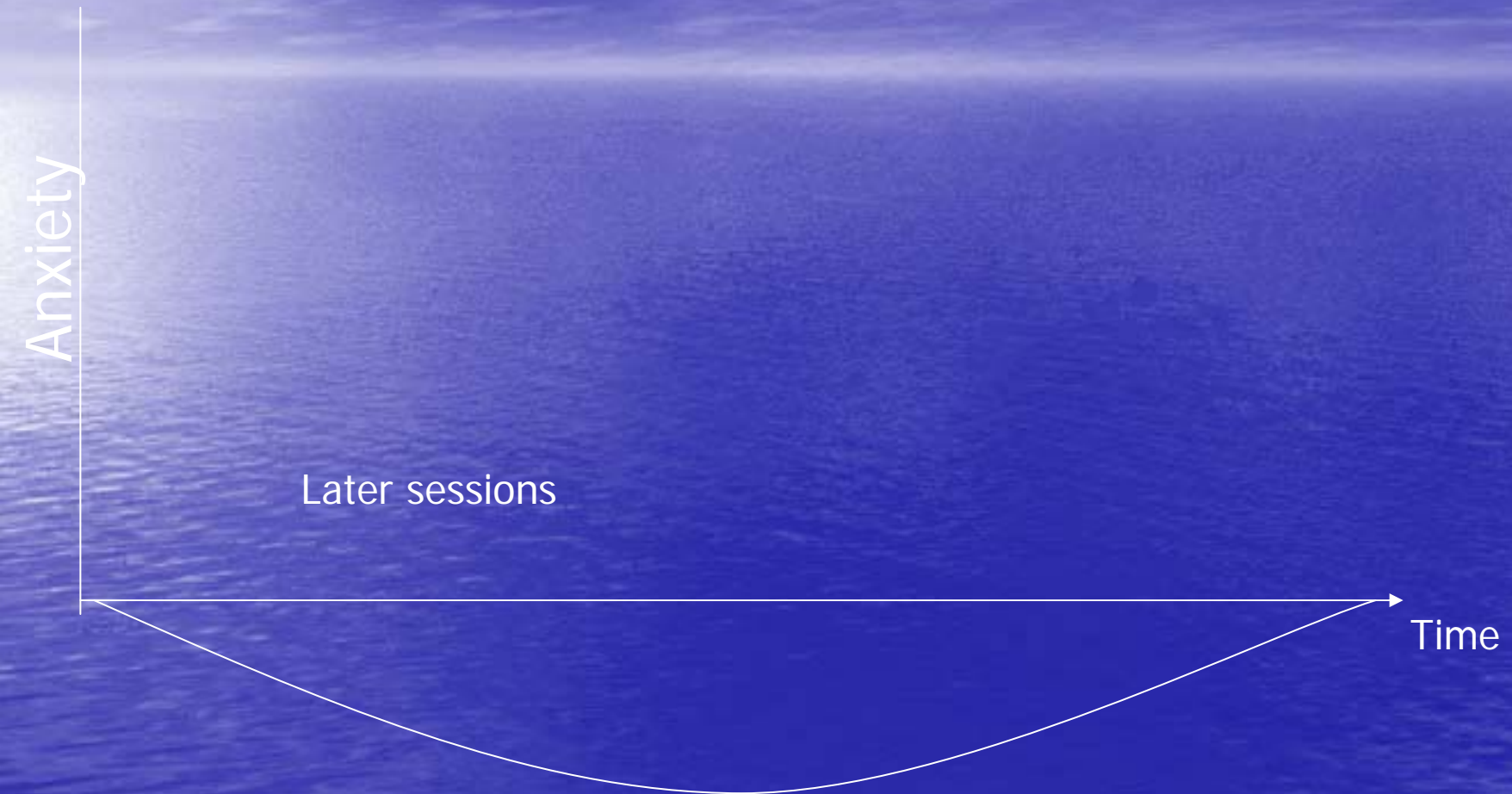
- I have never seen him before,
he only said he represented
the theological faculty



Anxiety during exercise intervention



Anxiety during exercise intervention

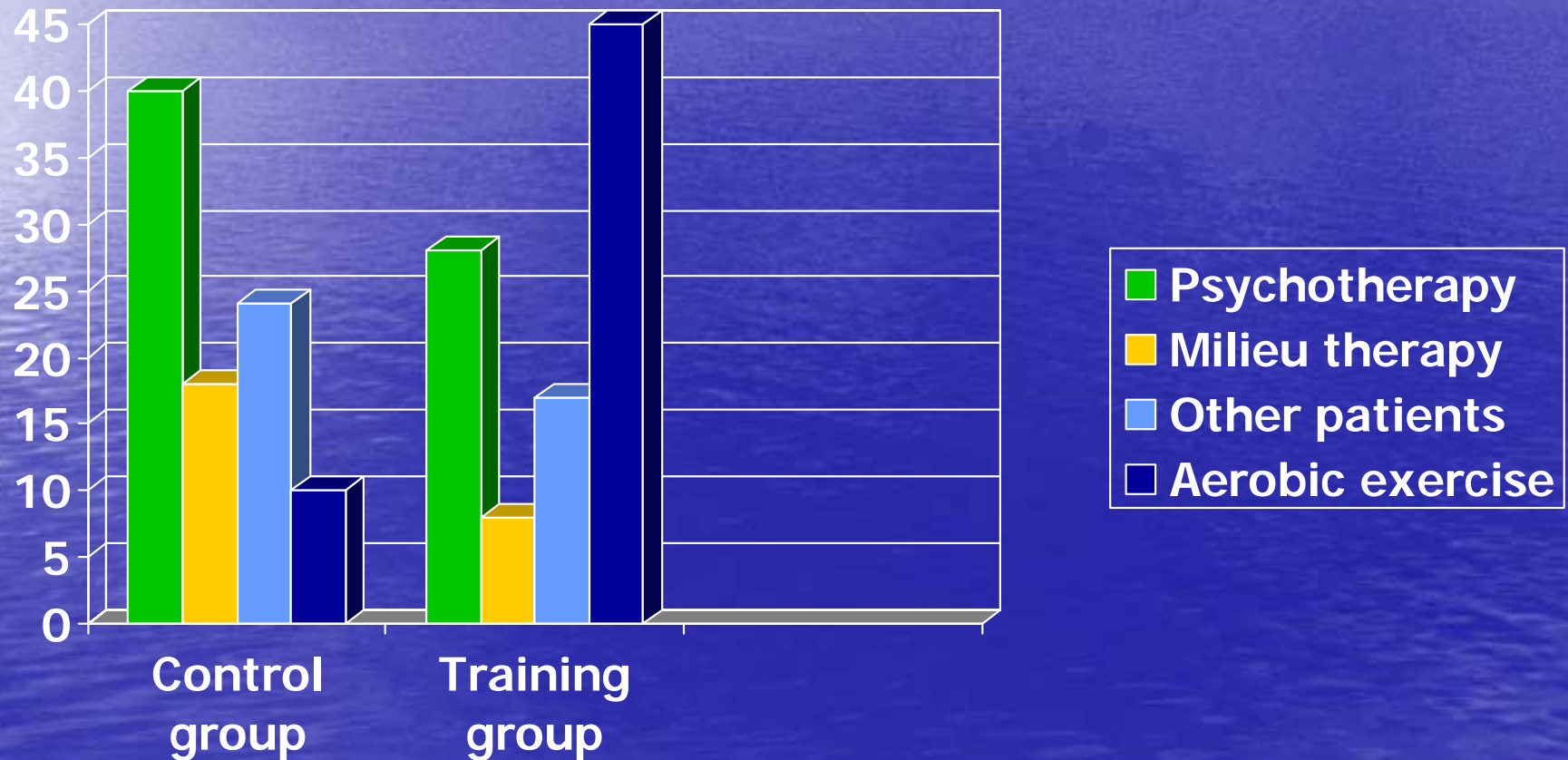


Lactate and panic attacks

- 2 out of 3 patients with panic disorder experience panic attacks during lactate infusion (Pitts & McGlure 1967)
- Lactate levels are higher during intensive exercise than during lactate infusion
- Panic attacks during exercise are rare:
 - 5 panic attacks in 440 exercise bouts in 420 patients (O'Connor et al, 2000)

Patients' ranking of most important therapeutic elements

(Martinsen et al, 1989)



Hypotheses about mechanisms

- Neurobiological hypotheses
 - Cell growth in hippocampus
 - Creation of new networks among nerve cells
 - Regulation of signal substances
 - Increase in blood flow to the brain
 - Increase in body temperature

Hypotheses about mechanisms

Cognitive behavioral theories

- Distraction vs. rumination (Nolen-Hoeksema)
- Behavioral activation (Dimidjian et al, 2006)
- Habituation (Orwin)
- Cognitive restructuring (Clark et al, 1997)

Limitations

- Only major depression studied properly
- Uncertain effect in depressive phases of bipolar disorder
- Probably limited effect in prevention of bipolar disorder
- No studies on adolescents and children
- Few studies on other disorders

Methodological weaknesses of available studies on depression

- Lawlor & Hopker (2001):
Randomisation process not adequately described:
Intention to treat analysis?
Blind evaluation of outcome?
Follow-up investigations?
Conclusion; "The effectiveness of exercise in reducing symptoms of depression cannot be determined".
- Craft and Landers (1997)
Exercise is associated with an antidepressant effect. Mean effect size = 0.72 in major depression

Concerns from clinical point of view

- Strict methodological standards: Increased cleft between practice and research?
- Should pharmacological studies set the standard for exercise intervention studies?
- Should the same methodological standards be required when assessing health promoting strategies with minimal side effects and minimal economic incentives (exercise), as with treatment forms with strong economic bonds and potentially serious side effects (medication)?

Limitations of RCT's

- Homogenous samples best suited
- Easiest to study the less severely ill
- Can the results be generalized to clinical practice?
- New hypotheses are not generated from RCT's
- Important to study clinical populations
- Need for qualitative studies

Challenges for application in practice

- Disseminate knowledge of potential benefits to the relevant groups
- How to make exercise easier accessible
- How to motivate patients as well as staff
- How to give adequate support to those who are not able to exercise on their own?

Personal experience with bipolar disorder (Andrew Solomon, author of The Noonday demon)

- What do you do to prevent relapse?
- I have regular contact with one who can interpret the signals. And I exercise for one hour every morning. I dislike exercise, but it helps.
- What is your advise for those who feel depression is coming?
- Seek help. Protect yourself from the stressors of life. Try to turn it quickly. When depression first takes of, it is on its own and difficult to stop. Further: Take your medication. Don't be alone. Structure, regular meals, enough sleep- remember that. And exercise is important – even if you don't have the power to do it.

Challenges for future research

- Well designed intervention studies still needed
- Studies should expand into other ages and diagnostic groups
- Qualitative studies

Ongoing exercise intervention studies in Norway

Schizophrenia

- Effects of intensive aerobic exercise intervention in schizophrenia: A controlled study (Nilsberg, Heggelund, Hoff, Helgerud and Morken in Trondheim)

Panic disorder

- Comparing exercise intervention and cognitive behavioural therapy: A randomized, controlled study
 - (Hovland, Nordhus et al in Bergen)

Conversion disorder

- The effect of exercise intervention in functional pareses
 - (Jordbru, Smestad, Jespersen and Martinsen from Stavern)

Eating disorders

- Aspects of exercise intervention in eating disorders: How to manage excessive exercise?
 - (Bratland-Sanda, Sundgot Borgen, Martinsen et al from Modum Bad)

After all

Year after year
you sit over the books.
You have gathered
more knowledge
than you need for nine lives.
After all so little is needed
And that tiny bit
The heart has always known.
In ancient Egypt
The god of wisdom
had the head of a monkey.

Olav H. Hauge

Nelson Mandela (1995)

- I have always thought that exercise is a key not only to physical health but to peace of mind. Many times in the old days I unleashed my anger and frustration on a punching bag rather than taking it out on a comrade or even a policeman. Exercise dissipated tension, and tension is the enemy of serenity. I found that I worked better and thought more clearly when I was in good physical condition, so exercise became one of the inflexible disciplines of my life.