The effect of pre-injury physical fitness on the initial severity and recovery from whiplash injury, at six-month follow-up

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FROM ABSTRACT

Objective:
To evaluate the effect of pre-injury physical fitness on the initial severity and recovery of motor vehicle-induced neck injury (whiplash injury).

Design:
A quantitative experimental design using both retrospective and prospective data.

Setting:
Metropolitan Police physiotherapy and rehabilitation department in the UK.

Subjects:
One-hundred and two patients with neck pain following whiplash injury.

Interventions:
Patients were divided into three groups based on pre-injury physical fitness (low, medium and high). Recovery was compared between the three groups initially then again at three and six months.

Main measures:
Three measurement scales were used: the Neck Disability Index, the Problem Percentage, and the Physical Activity Scale.

Results:
Pre-injury physical fitness had a marked effect on recovery at three and six months, with the medium and high fitness groups having significantly better recovery than the low fitness group.

At three months the Neck Disability Index score for the low fitness group was 12 compared with 7 and 7.5 for the medium and high fitness groups respectively.

At six months the Neck Disability Index score was 9 for the low fitness group compared with 0 and 3 for the medium and high fitness groups.

The return to work rate was almost twice as high for individuals with medium/high fitness.
Conclusion:
Early recovery from whiplash injury was significantly more likely for individuals with medium to high levels of pre-injury physical fitness than for individuals with low levels of pre-injury physical fitness.

THESE AUTHORS ALSO NOTE:

50% of whiplash-injured patients “require more than one month off work.”

“There is a great deal of evidence linking low levels of aerobic fitness to increased incidence of various injuries and diseases.”

“The medium and high fitness groups had significantly better recovery at both three and six months than the low fitness group, but that there was no significant difference in three- or six-month recovery between the medium and high fitness groups.”

DISCUSSION

“The main finding of the study was that individuals with medium to high levels of pre-injury physical fitness were much more likely to recover from whiplash injury than those with low levels of pre-injury physical fitness.”

“Statistical analysis revealed no difference in the initial severity of whiplash injury for differing fitness levels, but a marked difference in recovery at three and six months, with the medium and high fitness groups having significantly better recovery than the low fitness group.”

In this study:
58% of the patients had not reached functional recovery at 3 months.
30% had not reached functional recovery at 6 months.

This study found that 71% of whiplash-injured patients had not recovered at 3 months.

This study found that 44% of whiplash-injured patients had not recovered at 3 months, and that 31% had not recovered at 6 months.

This study found that 62% of whiplash-injured patients had not recovered at 3 months.
This study found that 62% of whiplash-injured patients had not recovered at 6 months.

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<th>% NOT Recovered at 3 Months</th>
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"Pre-injury physical fitness did have a markedly significant effect on recovery at both three months post injury and six months post injury, with recovery being significantly better for the medium and high fitness groups."

"These findings strongly suggest that individuals with low levels of recreational physical activity are at markedly greater risk of poor recovery from whiplash injury."

"At three months no (0 of 16) individuals with low fitness had functionally recovered compared with 51% (39 of 77) of individuals with greater levels of recreational physical activity."

"At six months 35% (6 of 17) of individuals with low fitness had functional recovery compared with 80% (53 of 67) of those with higher physical fitness."

It can be seen that overall recovery improves as fitness category increases.

"Individuals who perform no regular recreational exercise recover less well than individuals who perform 10–60 minutes of moderate activity per week, thus even moderate levels of activity confer some recovery benefits."

Individuals who did more than 3 hours of heavy physical activity per week (e.g. running) recovered slightly less well than individuals with moderate levels of physical activity. "A possible explanation why individuals with very high levels of activity recover less well compared with those with moderate levels of activity may be due to the effect of over training which can inhibit the immune system."

"Individuals with medium/high pre-injury fitness were almost twice as likely to return to their usual work within the first three months as individuals with low fitness."
“Low pre-injury physical fitness is a highly specific predictor of failure to recover from whiplash injury.”

CLINICAL MESSAGES FROM AUTHORS:

1) “Moderate to high levels of pre-injury physical fitness enhance the chances of early recovery following whiplash injury.”

2) “Aerobic based fitness should be encouraged in frequent road users.”

3) “Low pre-injury physical fitness is highly predictive of poor recovery following whiplash injury.”

KEY POINTS FROM DAN MURPHY

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1) In the studies referenced, between 44% to 71% of whiplash-injured patients have not recovered by 3 months after being injured.

2) In the studies referenced, between 30% to 62% of whiplash-injured patients have not recovered by 6 months after being injured.

3) In this study:
   A)) 58% of the patients had not reached functional recovery at 3 months.
   B)) 30% had not reached functional recovery at 6 months.

4) 50% of whiplash-injured patients “require more than one month off work.”

5) “There is a great deal of evidence linking low levels of aerobic fitness to increased incidence of various injuries and diseases.”

6) “Individuals with medium to high levels of pre-injury physical fitness were much more likely to recover from whiplash injury than those with low levels of pre-injury physical fitness.”
7) “Pre-injury physical fitness did have a markedly significant effect on recovery at both three months post injury and six months post injury, with recovery being significantly better for the medium and high fitness groups.”

8) “These findings strongly suggest that individuals with low levels of recreational physical activity are at markedly greater risk of poor recovery from whiplash injury.”

9) “At three months no (0 of 16) individuals with low fitness had functionally recovered compared with 51% (39 of 77) of individuals with greater levels of recreational physical activity.”

10) “At six months 35% (6 of 17) of individuals with low fitness had functional recovery compared with 80% (53 of 67) of those with higher physical fitness.”

11) “Individuals who perform no regular recreational exercise recover less well than individuals who perform 10–60 minutes of moderate activity per week, thus even moderate levels of activity confer some recovery benefits.”

12) Individuals who did more than 3 hours of heavy physical activity per week (e.g. running) recovered slightly less well than individuals with moderate levels of physical activity. “A possible explanation why individuals with very high levels of activity recover less well compared with those with moderate levels of activity may be due to the effect of over training which can inhibit the immune system.”

13) “Individuals with medium/high pre-injury fitness were almost twice as likely to return to their usual work within the first three months as individuals with low fitness.”

14) “Low pre-injury physical fitness is a highly specific predictor of failure to recover from whiplash injury.”

15) “Moderate to high levels of pre-injury physical fitness enhance the chances of early recovery following whiplash injury.”

COMMENTS FROM DAN MURPHY

This study makes it quite clear that many whiplash-injured patients have not recovered from their injuries at 3 and 6 months post trauma. This study also makes it clear that we should ask our whiplash-injured patients about how often they engage in physical exercise, as low levels of fitness are associated with a poor prognosis for recovery.