Reduction of psychological distress and obesity by increasing physical activity; The ‘Farming Fit’ study

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Active farmers?

Farmers are no longer as active as they used to be due to

• increased mechanisation & decreased physical work in farming,
• decreased local recreational activities (sports),
• decreasing social opportunities,
• isolation
• ageing
• and climate variability.
Hypothesis

Decrease in physical activity has negatively impacted mental health led to increased prevalence of overweight and obesity in Australian farming population
Farming Fit Hypothesis

Aims of the study

Identify the effect that increased physical activity had on biochemical health indicators including circulating cortisol levels, anthropometric measurements and psychological distress
Quasi-experimental controlled intervention study

Subjects

- Farm men and women participating in the Sustainable Farm Families programs
- 18-75 years
- \( \text{BMI} \geq 25 \text{ kg/m}^2 \)

Exclusion criteria

- Chronic terminal illness
- Pregnant or lactating
1. Participants were pre-assigned to intervention and control groups.
2. Data were collected at three occasions during the 6 months period of study.
3. Intervention group was given an exercise program devised with the supervision of an exercise physiologist with ongoing support through phone coaching by the research assistant.

<table>
<thead>
<tr>
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<th>Baseline</th>
<th>3 Month</th>
<th>6 Month</th>
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<tbody>
<tr>
<td>Physical Assessment</td>
<td>Salivary tests</td>
<td>Physical</td>
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<tr>
<td>Anthropometric</td>
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<td>Blood tests</td>
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<td>Salivary tests</td>
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<tr>
<td>Questionnaires</td>
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</table>
Methodology

Physical assessment
- BP
- Body fat percentage

Questionnaires
- Physical Activity
- DASS 21

Anthropometry
- Height, weight,
- Waist/hip circumference

Biochemical
- Venous blood for glucose, cortisol, total cholesterol, triglycerides, HDL and LDL
- Salivary cortisol tests done at four times during the day (9am, 12 noon, 4pm and 8pm) and then posted back to the laboratory
Salivary cortisol
Results

• Total of 68 (34 control, 34 intervention) completed study.
• Significant post-intervention reductions detected for body weight, BMI, waist circumference, serum triglycerides and systolic/diastolic blood pressure intervention group.
• No such reductions were observed within the control group.
Results

Among the intervention group, positive (more healthy) trends were observed including reduction of salivary cortisol, serum cortisol, total DASS score and increases of physical activity.

These trends of improvement were only in the intervention group however, they were not statistically significant.
Study group comparison
Mean changes (baseline & final)

Results

- BMI (kg/m²)
- Weight (kg)
- WC (cm)
- Body Fat%
- Blood Cortisol %
## Results

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
<th>Control group</th>
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<th>Intervention group</th>
<th>Control group</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (SD)</td>
<td>final (SD)</td>
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<td>Baseline (SD)</td>
<td>Final (SD)</td>
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<tr>
<td>Weight (kg)</td>
<td>94.90 (14.83)</td>
<td>92.84 (14.03)</td>
<td>&lt;0.001*</td>
<td>90.22 (12.35)</td>
<td>91.03 (12.39)</td>
<td>0.566</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>32.19 (3.39)</td>
<td>31.51 (3.32)</td>
<td>&lt;0.001*</td>
<td>30.56 (3.66)</td>
<td>30.87 (3.90)</td>
<td>0.048</td>
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<td>Waist circumference (cm)</td>
<td>102.56 (10.58)</td>
<td>101.12 (9.86)</td>
<td>0.05*</td>
<td>101.72 (9.90)</td>
<td>102.35 (10.34)</td>
<td>0.395</td>
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<td>Body fat %</td>
<td>35.47 (7.29)</td>
<td>34.82 (7.31)</td>
<td>0.279</td>
<td>33.57 (7.78)</td>
<td>33.21 (9.65)</td>
<td>0.772</td>
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<tr>
<td>Total cholesterol</td>
<td>5.58 (1.00)</td>
<td>5.39 (0.89)</td>
<td>0.261</td>
<td>6.02 (0.93)</td>
<td>5.61 (0.95)</td>
<td>0.084</td>
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<tr>
<td>(mmol/L)</td>
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<td>Triglyceride (mmol/L)</td>
<td>1.49 (0.50)</td>
<td>1.271 (0.54)</td>
<td>0.015*</td>
<td>1.62 (0.64)</td>
<td>1.49 (0.67)</td>
<td>0.233</td>
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<td>HDL Cholesterol</td>
<td>1.47 (0.34)</td>
<td>1.42 (0.32)</td>
<td>0.180</td>
<td>1.47 (0.36)</td>
<td>1.42 (0.31)</td>
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<tr>
<td>(mmol/L)</td>
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<tr>
<td>LDL cholesterol</td>
<td>3.42 (0.93)</td>
<td>3.36 (0.80)</td>
<td>0.717</td>
<td>3.80 (0.80)</td>
<td>3.50 (0.83)</td>
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<tr>
<td>(mmol/L)</td>
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<tr>
<td>Blood Cortisol (nmol/L)</td>
<td>409.5 (120.97)</td>
<td>373.68 (131.12)</td>
<td>0.180</td>
<td>370.88 (110.24)</td>
<td>377.68 (120.67)</td>
<td>0.712</td>
</tr>
</tbody>
</table>
Salivary Cortisol

- Baseline
- 3-Month
- 6-Month

Intervention vs Control

Salivary Cortisol (nmol/L)
Incremental area under the curve (AUC) (mean ± se) of salivary cortisol
Conclusion

- Increasing physical activity positively influence both the physical and mental health of farm men and women.

- Further intervention research on well-structured randomly selected samples are required to help close the gap in physical and mental health experienced by the agricultural communities.
Acknowledgment

Authors acknowledged the support of all farm men and women who participated in this project, the NCFH teams, vitality rehab and beyondblue for research funding