Introduction

- Chemo signal molecules are involved in unconscious social communication.
- Apocrine sweat is the main source for chemo-signals substances.
- Oxytocin is a hormone that plays a role in social cognition and behaviors such as: bonding, parenthood, affiliation and friendship.
- Several studies have found that aerobic exercise is the main way that oxytocin can be released and it might have to led to improved birth processes and even reduced the size and volume of breast cancer growth in mice.

Oxytocin is present in sweat.

For men, oxytocin levels in saliva increased in all conditions, whereas women’s oxytocin levels rise only when they train alone.

Among both genders, there is more oxytocin in sweat while training in solitary condition compared to social conditions.

Positive and negative emotions depend on the social environment in which the activity was performed.

Mood ratio was found to be associated with an anxious attachment pattern.

The Research Questions

1. Is there Oxytocin in human sweat?
2. How is oxytocin affected by aerobic environment we train in—alone vs. social?
3. Is mood affected by our characteristics and the social environment in which we exercise before and after training?

Method

25-45 minutes of workout

The levels of Oxytocin in saliva in response to aerobic workout by gender

Males showed significantly higher levels of post activity oxytocin, regardless of the social environment. However, females showed significantly higher levels of post activity oxytocin, only when they trained alone.

The levels of Oxytocin in sweat in response to aerobic workout by gender

Both genders showed significantly higher levels of Oxytocin while training alone compared to the social condition.

References

4. Panas Negative by group Pearson Correlation .656* - .392* ATT_ANX Sig (2 tailed) 0.028 0.032 N 11 30 Significant differences *p < 0.05.

Conclusions

Oxytocin is present in sweat.

For men, oxytocin levels in saliva increased in all conditions, whereas women’s oxytocin levels rise only when they train alone.

Among both genders, there is more oxytocin in sweat while training in solitary condition compared to social conditions.

Positive and negative emotions depend on the social environment in which the activity was performed.

Mood ratio was found to be associated with an anxious attachment pattern.

Previous Studies

Martial Arts:

Oxytocin levels in saliva increased while training in martial art. Significant differences in oxytocin levels were found in the Peak-Training time in ground grappling compared to “punch-kick” sparring.

The release of oxytocin to the blood during aerobic activity vs other activities:

A significant increase in oxytocin levels was found only in the aerobic group, this level remains stable even after 40 minutes from the beginning of the activity.

The role of oxytocin in aerobic activity

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Method

Questionnaire + Samples

Study 1

The levels of Oxytocin in saliva in response to aerobic workout by gender

Females’ Salivary Oxytocin

Males’ Salivary Oxytocin

Alone (n=20) Social (n=14)

Alone (n=23) Social (n=25)

Before

After

Before

After

Males showed significantly higher levels of post activity oxytocin, regardless of the social environment. However, females showed significantly higher levels of post activity oxytocin, only when they trained alone.

The levels of Oxytocin in sweat in response to aerobic workout by gender

Females’ Sweat Oxytocin

Males’ Sweat Oxytocin

Alone (n=20) Social (n=14)

Alone (n=23) Social (n=25)

Both genders showed significantly higher levels of Oxytocin while training alone compared to the social condition.

Study 2

Positive and Negative Emotions by gender

Females’ Mood scales-positive and Negative affect

Males’ Mood scales-positive and Negative affect

Mood score - pre VS. post activity

Panas Negative by group Pearson Correlation .656* - .392* ATT_ANX Sig (2 tailed) 0.028 0.032 N 11 30 Significant differences *p < 0.05

High anxiety scores were correlated with decreased positive emotions after exercise when training alone.

High anxiety scores were correlated with increased negative emotions after exercise when training in a group.