

**KARYA TULIS ILMIAH**

**EFEK MENGGONSUMSI AIR DENGAN MINERAL  
RENDAH DAN  
MINUMAN ISOTONIK BERVITAMIN  
TERHADAP KEMAMPUAN REHIDRASI**

**Disusun Untuk Memenuhi Sebagian Syarat Memperoleh  
Derajat Sarjana Kedokteran Pada  
Fakultas Kedokteran Universitas Muhammadiyah Yogyakarta**



**Riverian Wijaya Kodri**

**NIM: 20040310186**

**FAKULTAS KEDOKTERAN**  
**UNIVERSITAS MUHAMMADIYAH YOGYAKARTA**

**HALAMAN PENGESAHAN**

**EFEK MENGONSUMSI AIR DENGAN MINERAL RENDAH DAN  
MINUMAN ISOTONIK BERVITAMIN TERHADAP  
KEMAMPUAN REHIDRASI**

**Disusun oleh:**

**Nama : Riverian Wijaya Kodri**

**NIM : 2004-031-0186**

**Telah diseminarkan dan disetujui pada tanggal:  
6 Desember 2007**

**Dosen Pembimbing**

**dr. Ratna Indriyati, M. Kes**

**Mengesahkan**

**Fakultas Kedokteran  
Universitas Muhammadiyah Yogyakarta**

**Dekan**



**Sentosa S. A. M. Kes**

## MOTTO

*"Dan sampaikanlah berita gembira kepada mereka yang beriman dan berbuat baik, bahwa bagi mereka disediakan surga-surga yang mengalir sungai-sungai di dalamnya. Setiap mereka diberi rezki buah-buahan dalam surga-surga itu, mereka mengatakan : "Inilah yang pernah diberikan kepada kami dahulu." Mereka diberi buah-buahan yang serupa dan untuk mereka di dalamnya ada isteri-isteri yang suci dan mereka kekal di dalamnya."*

*(Q. S. Al-Baqarah: 25)*

*"Katakanlah: "Inginkah aku kabarkan kepadamu apa yang lebih baik dari yang demikian itu?". Untuk orang-orang yang bertakwa, pada sisi Tuhan mereka ada surga yang mengalir dibawahnya sungai-sungai; mereka kekal didalamnya. Dan isteri-isteri yang disucikan serta keridhaan Allah. Dan Allah Maha Melihat akan hamba-hamba-Nya."*

*(Q. S. Ali-Imran: 15)*

*"Sesungguhnya orang-orang yang menyembunyikan apa yang telah Kami turunkan berupa keterangan-keterangan dan petunjuk, setelah Kami menerangkannya kepada manusia dalam Al Kitab, mereka itu dila'nati Allah dan dila'nati oleh semua yang dapat mela'nati"*

*(Q. S. Al-Baqarah: 159)*

*Maka Maha Tinggi Allah Raja Yang sebenar-benarnya, dan janganlah kamu tergesa-gesa membaca Al Qur'an sebelum disempurnakan mewahyukannya kepadamu, dan katakanlah: "Ya Tuhanku, tambahkanlah kepadaku ilmu pengetahuan."*

*(Q. S. Thaahaa: 114)*



## **HALAMAN PERSEMBAHAN**

*Sujud serta syukur kehadirat Allah Swt. Atas rahmat, nikmat, dan segala bentuk, kasih  
sayang-Nya yang tiada terkira.*

*Shalawat serta salam senantiasa terlimpah kepada Nabi Muhammad Saw, keluarga, sahabat,  
dan pengikut beliau.*

1947-1948

1. The first part of the report is devoted to a general survey of the situation in the country.

2. The second part deals with the economic situation.

3. The third part is devoted to the social situation.

4. The fourth part deals with the cultural situation.

5. The fifth part is devoted to the political situation.

6. The sixth part deals with the foreign relations.

7. The seventh part is devoted to the military situation.

8. The eighth part deals with the internal security.

9. The ninth part is devoted to the education.

10. The tenth part deals with the health.

11. The eleventh part is devoted to the sports.

12. The twelfth part deals with the arts.

13. The thirteenth part is devoted to the science.

14. The fourteenth part deals with the literature.

15. The fifteenth part is devoted to the music.

16. The sixteenth part deals with the cinema.







Penulis sepenuhnya menyadari bahwa karya tulis ilmiah ini masih jauh dari sempurna, sehingga saran dan kritik yang membangun sangat diharapkan penulis.

## DAFTAR ISI

	Halaman
HALAMAN JUDUL .....	i
HALAMAN PENGESAHAN.....	ii
MOTTO.....	iii
HALAMAN PERSEMBAHAN.....	iv
KATA PENGANTAR.....	v
DAFTAR ISI.....	vii
DAFTAR TABEL.....	xi
DAFTAR GAMBAR.....	xii
DAFTAR LAMPIRAN.....	xiii
<i>ABSTRACT</i> .....	xiv
INTISARI.....	xv
BAB I. PENDAHULUAN.....	1
A. Latar Belakang.....	1
B. Perumusan Masalah.....	5
C. Keaslian Penelitian.....	5
D. Tujuan Penelitian.....	5
E. Manfaat Penelitian.....	6
F. Kesimpulan.....	7

## Introduction

1. Introduction

The purpose of this study is to investigate the effects of the independent variable on the dependent variable.

The research is based on the following hypotheses:

H1: There is a positive relationship between X and Y.

H2: There is a negative relationship between X and Y.

H3: There is no significant relationship between X and Y.

The study is structured as follows:

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Methodology

Chapter 4

Chapter 5: Results and Discussion

Chapter 6: Conclusion

Chapter 7: References

Chapter 8: Appendix

Chapter 9: Bibliography

Chapter 10: Glossary

Chapter 11: Index

Chapter 12: Acknowledgements

A.1. Pengaturan Faal Dari Cairan dan Elektrolit.....	7
A.2. Anatomi Fisiologi Ginjal.....	9
A.2.1. Susunan Umum Ginjal dan Traktus Urinarius.....	9
A.2.2. Suplai Darah Ginjal.....	10
A.2.3. Persarafan Pembuluh Darah Ginjal.....	12
A.2.4. Nefron Sebagai Unit Fungsional Ginjal.....	13
A.3. Peranan Hormon Dalam Mengatur Eksresi Ginjal.....	15
B.1. Cairan Tubuh.....	17
B.1.1. Kompartemen Cairan Tubuh.....	17
B.1.2. Komposisi Ion Cairan Tubuh.....	19
B.1.3. Asupan dan Pengeluaran Cairan Tubuh.....	20
B.1.4. Pengaturan Keseimbangan Cairan Tubuh.....	21
B.1.5. Keseimbangan CIS dan CES.....	22
B.2. Kebutuhan Cairan Pada Saat Beraktivitas.....	23
B.3. Air Minum.....	25
B.4. Kemampuan Rehidrasi.....	26
C. <i>Exercise</i> .....	29
D. Kerangka Konsep.....	31
E. Hipotesis.....	32
<b>BAB III. METODE PENELITIAN.....</b>	<b>33</b>
A. <i>Research Design</i> .....	33

1. The first part of the text discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for financial transparency and accountability. This section also highlights the role of internal controls in preventing errors and fraud.

2. The second part of the text focuses on the importance of regular audits and reviews. It explains that audits help to identify any discrepancies or irregularities in the financial statements. This process is crucial for ensuring the reliability of the financial data and for maintaining the trust of stakeholders.

3. The third part of the text discusses the importance of maintaining up-to-date financial statements. It notes that financial statements should be prepared and reviewed regularly to provide a clear and accurate picture of the organization's financial health. This includes the balance sheet, income statement, and cash flow statement.

4. The fourth part of the text discusses the importance of maintaining accurate records of all assets and liabilities. It emphasizes that proper record-keeping is essential for determining the net worth of the organization. This section also highlights the role of internal controls in preventing errors and fraud.

5. The fifth part of the text discusses the importance of maintaining accurate records of all income and expenses. It emphasizes that proper record-keeping is essential for determining the organization's profitability. This section also highlights the role of internal controls in preventing errors and fraud.

6. The sixth part of the text discusses the importance of maintaining accurate records of all tax payments and deductions. It emphasizes that proper record-keeping is essential for ensuring compliance with tax laws and for maximizing the organization's tax benefits. This section also highlights the role of internal controls in preventing errors and fraud.

7. The seventh part of the text discusses the importance of maintaining accurate records of all financial transactions. It emphasizes that proper record-keeping is essential for ensuring the accuracy of the financial statements. This section also highlights the role of internal controls in preventing errors and fraud.

8. The eighth part of the text discusses the importance of maintaining accurate records of all financial activities. It emphasizes that proper record-keeping is essential for ensuring the accuracy of the financial statements. This section also highlights the role of internal controls in preventing errors and fraud.

9. The ninth part of the text discusses the importance of maintaining accurate records of all financial data. It emphasizes that proper record-keeping is essential for ensuring the accuracy of the financial statements. This section also highlights the role of internal controls in preventing errors and fraud.

10. The tenth part of the text discusses the importance of maintaining accurate records of all financial information. It emphasizes that proper record-keeping is essential for ensuring the accuracy of the financial statements. This section also highlights the role of internal controls in preventing errors and fraud.

B. Subyek Penelitian.....	33
C. Lokasi Penelitian.....	34
D. Variabel Penelitian.....	34
E. Definisi Operasional.....	34
F. Instrumen Penelitian.....	35
G. Jalannya Penelitian.....	36
H. Analisa Data.....	40
<b>BAB IV. HASIL DAN PEMBAHASAN.....</b>	<b>41</b>
A. Hasil Penelitian.....	41
A.1. Karakteristik Subyek Penelitian.....	41
A.2. Berat Badan.....	42
A.3. Kejernihan Urin.....	44
A.4. Warna Urin.....	48
A.5. Berat Jenis Urin.....	51
B. Pembahasan.....	54
B.1. Sebelum dan Sesudah <i>Exercise</i> .....	54
B.2. Rehidrasi.....	56
<b>BAB. V. KESIMPULAN DAN SARAN.....</b>	<b>59</b>
A. Kesimpulan.....	59
	50



## DAFTAR TABEL

	Halaman
Tabel 1. Indeks Status Hidrasi.....	28



## DAFTAR GAMBAR

	Halaman
Gambar 1. Kompartemen-Kompartemen Cairan Tubuh Utama.....	18
Gambar 2. Komposisi Jumlah Ion CIS dan CES.....	19
Gambar 3. Rerata Berat Badan Kelompok Kontrol, Kelompok Perlakuan I dan Perlakuan II.....	42
Gambar 4. Rerata Kejernihan Urin Kelompok Kontrol, Kelompok Perlakuan I dan Perlakuan II.....	44
Gambar 5. Rerata Warna Urin Kelompok Kontrol, Kelompok Perlakuan I dan Perlakuan II.....	48
Gambar 6. Rerata Berat Jenis Urin Kelompok Kontrol, Kelompok Perlakuan I dan	



## **DAFTAR LAMPIRAN**

Lampiran 1. *Urine Color Chart*

Lampiran 2. Surat Pernyataan (Inform Consent)

Lampiran 3. Kuisisioner Penelitian

Lampiran 4. Pelaksanaan Penelitian