

S. M. H/3/68

Paper S-109
Kinesiology

THIS DOCUMENT CONTAINS: -

1. Interdisciplinary Committee's proposed Master of Science (Education) Degree.
 - General Regulation
 - Interdisciplinary Program Leading to M.Sc. (Education).
 - Description of Courses

2. Supporting Documents
 - Laboratory Resources
 - Research Grants - External Support
 - Financial Aid to Graduate Students
 - Library Resources
 - Faculty Background and Research Interests
 - Canadian Universities Offering Graduate Degrees in Kinesiology and Related Fields.

Interdisciplinary Committee

Dean B.L. Funt, Chairman

Dr. C. Irwin, Faculty of Science Representative
Dr. B. Kemp, Faculty of Science Representative
Dr. H. Weinberg, Faculty of Arts Representative
Dr. G. Kirchner, Faculty of Education Representative
Dr. S. Stratton, Faculty of Education Representative

S.M. 4/13/68

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GENERAL REGULATIONSFACULTY OF EDUCATIONCHANGE - NEW REQUIREMENTSADMISSION

All enquiries concerning admission should be directed to the Head of the Department in which the applicant wishes to pursue his studies.

The general admission requirement to a graduate program leading to a Master's degree in the Faculty of Education is a Bachelor's degree with a minimum of high second class standing. Special consideration may be given to those applicants who cannot meet this general requirement but who have demonstrated superior scholarly or professional attainment. In addition, applicants who cannot satisfy this general admission requirement may be registered as unclassified students and be allowed to complete, under the direction of the Department concerned, such additional work as will meet the requirements for admission.

A graduate of another university applying for permission to enter as a graduate student is required to submit with his application an official statement of his graduation and a transcript of his academic record. He must also give the names and addresses of at least two professors under whom he has worked and who would be willing to give a confidential assessment of the applicant's capacity for graduate work.

A student who transfers from another university may be given credit for his program at the discretion of the Head of the Department concerned in consultation with the Senate Graduate Admissions Committee.

Students admitted to graduate work must have competence in the English language. Students from non-English speaking countries may be required to prove their competence.

In addition to the above general admission requirement of the Faculty of Education, all applicants must meet the special admission requirements of the Department in which they plan to work.

Graduate students who propose to apply for P.A. certification by the Department of Education in Victoria must complete the Professional Development Program for teacher education or its equivalent. (see Undergraduate Calendar)

Faculty of Education (cont'd)

REGISTRATION AND RESIDENCE REQUIREMENTS

A graduate student must register each semester until all requirements, including the filing of the thesis and the passing of the final examination for which he is working, are completed.

The minimum period of registration for the M.A. (Education) and M.Sc. (Education) degrees, during which the student must be under supervision, is three semesters, at least two of which must be consecutive.

TIME LIMIT

The degree requirements must be met within five years. This period includes work transferred from other institutions.

SUPERVISION OF CANDIDATE'S WORK

Each candidate will have a Supervising Committee to supervise his work. The composition of the Supervising Committee will be as follows:

- a) Committee Chairman - approved by the Head of the Department after consultation with the candidate and the departmental faculty.
- b) Two other faculty members, at least one of whom will normally be from outside the Department. These members will be chosen by the Committee Chairman after consultation with the candidate and the Head of the Department.

DEGREE REQUIREMENTS

The minimum requirements for the Master's degree are thirty semester hours of graduate work which may be divided among graduate course work, special project, and a thesis. In addition, all graduate students in the Faculty of Education will be expected to attend a general faculty/student seminar which will be non-credit.

Individual Departments may require additional courses at the graduate or undergraduate level.

THESIS

Each candidate will be required to submit a thesis of sufficient quality to satisfy the members of his Supervising Committee of his scholarship. The thesis will report the results of the candidate's research in a form acceptable to the University.

The thesis must be presented and lodged in the University Library. Details concerning the final form for binding these are available from the Library.

DEPARTMENT OF PHYSICAL DEVELOPMENT STUDIES

Glenn Kirchner, B.P.E. (British Columbia), M.S., Ed.D. (Oregon)
Professor
Head, Physical Development Studies.

Eric W. Banister, B.Sc. (Manchester), M.P.E. (British Columbia),
Ph.D. (Illinois), F.A.C.S.M.

James A.P. Day, B.Ed. (Alberta), M.A., Ph.D. (Oregon)
Assistant Professor

W. Raymond Duncan, B.A., M.D., F.R.C.S.(C)
Associate

Iris L. Garland, B.Sc.(Illinois), M.S. (U.C.L.A.)
Assistant Professor

William D. Ross, B.P.E. (British Columbia), M.A., M.S., Ph.D. (Oregon),
F.A.C.S.M.
Associate Professor

Stephen T. Stratton, B.P.E., B.Ed. (British Columbia), M.S., Ed.D.(Oregon),
Associate Professor

Robert J. Tomanek, B.S. (University of Omaha), M.A., Ph.D. (University of Iowa)
Assistant Professor

Margaret Savage, B.A., M.S. (University of Washington)
Instructor

The Department of Physical Development Studies, in concert with the Senate Interdisciplinary Committee on Kinesiology, offers opportunity for graduate research leading to the M.Sc.(Education) in the anatomical-physiological and social-psychological areas of Kinesiology.

GENERAL REGULATIONS

Students wishing to apply must satisfy the general regulations of the M.Sc.(Education) degree. In addition, applicants must satisfy Departmental requirements.

ADMISSION

The requirements for admission to the M.Sc.(Education) program in Kinesiology is a B.Sc.(Kinesiology) degree with a high second class standing from this University or its equivalent.

THESIS

The thesis must be presented in bound form and lodged in the University Library. Details concerning the format required are available upon request from the Library.

	Course Offerings
Summer, 1968	No courses offered ✓
Fall, 1968	801-5, 803-3 or 804-5
Spring, 1969	802-5, 803-3 or 804-5 and 805-3

DESCRIPTION OF GRADUATE COURSES

801-5: Kinesiology - Anatomical, Physiological and Mechanical Aspects.

A comprehensive examination of the findings and inter-relationships of current research in the Anatomical, Physiological and Mechanical Aspects of Kinesiology.

802-5: Kinesiology - Psycho-Social Aspects

A comprehensive examination of the findings and inter-relationships of current research and theory in the Psychological and Sociological Aspects of Kinesiology.

803-3: Seminar Kinesiology I

This seminar will be organized to explore specific topics in designated areas to facilitate scholarly activity involving recourse to the literature, experimentation, and written reports.

804-5: Seminar Kinesiology II

As above, with time allowance for continued exploration.

805-3: Special Topics

Individual students may pursue topics of special interest with the stipulation that their study culminate in a scholarly paper as evidence of their mastery of the topic.

M.Sc. (Education) Thesis

SUPPORTING DOCUMENTS

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Physiology

LABORATORY RESOURCES

The existing laboratory resources which would be available to graduate students can perhaps best be described by identifying the human, and to some extent animal, parameters we are at present able to evaluate. The facilities include four separate rooms including areas for analysis of human activity and for animal holding, observation and analysis. In all instances the equipment available has been selected by qualified faculty as being the most practical, accurate and valid equipment for the purpose for which it is intended.

ANTHROPOMETRIC MEASURES

- Linear i.e. heights and lengths of body and its parts
- Girth i.e. body part circumferences
- Fat i.e. skin fold measurements, body density and lean body mass
- Photogrammetry i.e. somatotyping

PHYSIOLOGICAL MEASURES

Cardiovascular pulse rate, blood pressure, blood flow, heart sounds, korotkoff sounds, E.K.G. oxhemoglobin blood concentration, stroke volume, cardiac output.

Pulmonary lung volumes, respiratory rate, oxygen uptake, carbon-dioxide production, calorimetry (including open and closed circuits, Kofranyi-Michaelis meter and I.M.P. meter), oxygen consumption.

Neuro-Muscular Muscle Function - electro myography and ergometry including evaluation of muscle tension, strength, fatigue and endurance. These measures may be determined for static, concentric and eccentric muscle function.

Motor Function - bio-electric potentials, E.M.G., E.K.G., E.E.G. reaction time, speed of movement, (Photography both still and cine) flexibility, balance agility.

Other Body Measures sweat production and composition, body temperatures, G.S.R. alactacid and lactacid mechanisms, acid-base balance, urinary epinephrine and norepinephrine production cholesterol and lipid triglycerides.

HISTOLOGICAL ANALYSIS

Equipment available for biological analysis permits both quantitative and qualitative analysis of a variety of animal tissues; (i.e.) histological preparation, cell measurement, cell count, and micro-photography and projection.

Equipment is also available for exercising subjects in a variety of conditions and for monitoring and recording most listed measures by both normal and telemetric methodology. Budget has also been approved for some additional equipment to compliment the above resources. These include facilities for skeletal age assessment. It is anticipated that we will have the availability of an environmental chamber in the immediate future.

Gene Seeliger

In terms of laboratory equipment, by May 1, 1968, our financial statement will include:

(1) Equipment purchased through departmental funds:

1965-66	\$	5,500.00
1966-67		16,500.00
1967-68		35,700.00
1968-69		49,281.00

(2) Equipment purchased through University Research Funds:

1965-68	12,500.00
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(3) Equipment purchased through External Grants:

1965-67	16,500.00
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(4) Equipment to be purchased during 1968-69:
through External Grants.....

74,000.00

Physiology

RESEARCH GRANTS - EXTERNAL SUPPORT

During the 1967-68 academic year faculty members of the Department of Physical Development Studies received \$79,585.00 from various granting agencies. Support was received from N.R.C., Department of National Health and Welfare, B.C. Heart Foundation, U.S. Department of Health and Welfare, Provincial Department of Social Welfare, School District No. 43 and the President's Research Grant Fund.

As of October 31, 1967 nine research proposals have been submitted to external agencies. The total amount represented in these proposals is \$149,118.00.

The following breakdown of research awards will provide the committee with a general idea of the present and future support provided each faculty member.

RESEARCH GRANTS

	<u>Current Support (1967-68)</u>	<u>Grants Pending (1968-69)</u>
	\$ 79,585.00	\$ 149,118.00
Kirchner	6,100.00 865.00	17,500.00
Stratton	1,070.00	
Garland	810.00	
Tomanek	2,000.00 1,600.00 4,000.00	9,708.00
Banister	250.00 2,000.00 13,980.00 8,000.00 700.00 800.00	72,300.00 12,314.00
Ross	12,500.00 2,000.00 100.00 2,000.00 20,000.00	5,800.00 10,000.00 20,000.00
Savage	810.00	
Day	-	1,500.00

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FINANCIAL AID TO GRADUATE STUDENTS

Through the Fitness and Amateur Sport Directorate, Department of National Health and Welfare, the following financial aid is available to qualified graduate students.

MASTER'S DEGREE CANDIDATES:

\$2,000.00 for one full academic year. Eligibility is second class or better. Teaching experience, although not required, is strongly recommended.

DOCTORAL DEGREE CANDIDATES:

\$2,000.00 per year for two successive years plus, if at least one full year of study is undertaken.

- a) dependent's allowance of \$500.00 payable each year, and -
- b) return travel (air rates) between places of residence and study.

In addition to the above, our Department could provide Teaching Assistantship (\$1,200.00 per semester), plus reasonable assurance of the \$1,000.00 stipend for their "semester free of teaching". Also, submitted research grants provide for research assistants with salaries comparable to our Graduate Assistantship rates.

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LIBRARY RESOURCES

(in the Subject Areas In Kinesiology)

Since Kinesiology is interdisciplinary, the library holdings necessary to support such a program are classified in a variety of subject areas. Although the book requests of other departments are helpful in building the library holdings in the various areas, faculty members in Kinesiology must have a free hand in the selection of pertinent materials. The following list demonstrates the breadth of the field.

Subject Areas Related to and/or Comprising Kinesiology

(By library of Congress Classification)

- BF - Psychology (motor performance and learning)
- GN - Anthropology. Somatology. Ethnology. (anthropometry is an area of particular relevance)
- GV - Physical Training and Dance (cultural aspects of motor performance)
- H - Social Sciences
- HM - HV (cultural aspects of motor performance)
- QC - Physics (mechanics of human movement)
- QH - Natural History (microscopy and general biology - works here are essential for all of the Kinesiology areas which are based on biological laws and knowledges)
- QL - Zoology (general and specific aspects related to: human growth and physical development, human anatomy, functional anatomy and physiology of motor activity)
- QM - Human Anatomy (gross and microscopic anatomy, developmental anatomy and functional anatomy)
- R - Medicine (general) The Kinesiology Program is greatly handicapped since Simon Fraser does not have a Faculty of Medicine. There are numerous areas classified under "Medicine" which are directly related to Kinesiology. The present library holdings in these areas are at best meager.
- RB - Pathology (experimental pathology and physical anomalies are relevant from the standpoint of physical adaptation and physical rehabilitation)
- RD - Surgery (of some interest in the area of anatomy - surgical atlases)
- RJ - Pediatrics - (includes all works on post-natal growth and development - this area is of vital significance to Kinesiology)
- RM - Therapeutics (correctives, rehabilitation and adaptives works are all classified under this section)

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The acquisition of serials (new and backfile) is primarily in the area of science. The following list includes new journals (requested by Physical Development Studies) which we will commence receiving in January, 1968.

Circulation Research
Human Resources Centre. Research Bulletin
Physical Therapy Review
Journal of Bone and Joint Surgery (U.S.)
Journal of Perceptual and Motor Skills
American Heart Journal
U.S. Navy Special Services Centre. Human Engineering Report
American Journal of Physical Medicine
U.S. Navy Special Services Centre. Technical Report S.O.C.
Yessis Translation Review (California State College at Fullerton)
Ergonomics
Akademia Nauk S.S.S.R. Doklady. (Biological Science Section,
English Translation)
American Journal of Anatomy
Journal of Gerontology
Lancet

Present Rate of Growth

Since the establishment of the Kinesiology Degree (B.Sc.) the emphasis of Physical Development Studies book and serial requests has been in the areas of Kinesiology. Most of the areas are developing at a satisfactory rate. We are naturally greatly aided by the requests of other departments. While, most of the titles which we request are of interest to other segments of the University.

Titles in Medicine are insufficient at the present time, consequently more emphasis must be placed in these areas.

The rapid growth in the number of serials is most encouraging when considering a graduate program. With the expansion of our own library holdings and the services of Inter-Library Loan, a graduate program could be initiated in the very near future.

Genealogy

I) NAME: KIRCHNER, Glenn

POSITION: Head,

DEPARTMENT: Physical Development Studies, Simon Fraser University,
Burnaby 2, British Columbia.

II) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.P.E., 1954, University of British Columbia
M.Sc., 1956, University of Oregon
Ed.D., 1958, University of Oregon.

III) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

1960-65 - Associate Professor, Division of Health, Physical Education
and Recreation, Eastern Washington State College, Cheney,
Washington.

1965- - Head, Department of Physical Development Studies, Physical
Development Centre, Simon Fraser University, Burnaby 2, B.C.

1. Director, "Medical Lake Project". Joint Project sponsored by Eastern Washington State College and Medical Lake School District, Spokane, Washington. 1961-1965.
2. Chief Investigator, "Revision of Washington State Elementary School Physical Fitness Norms". (Government Grant). 1964.
3. Chief Investigator, "Survey of British Columbia Using the Elementary School Physical Fitness Test", (University Grant). 1966.
4. Chief Investigator, "Joint S.F.U.-School District No. 43 Elementary School Physical Education Project". (Joint Financed). 1967.

IV) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

1. Elementary School Physical Fitness Test Manual. Eastern Washington State College Printers, 1959.
2. "Development of Revised Norms for the Washington State Elementary School Physical Fitness Test". State Department of Public Instruction, 1965. (Government Research Grant).
3. Washington State Elementary School Physical Fitness Test Manual, 2nd edition.. Olympia, Washington, State Department of Public Instruction, 1966.
4. Medical Lake Physical Education Guide, Grades K - 3, Eastern Washington State College Printers, 1963, 540 pages.
5. Medical Lake Physical Education Guide, Grades 4 - 6. Eastern Washington State College Printers, 1964, 530 pages.
6. Physical Education for Elementary School Children. Wm. C. Brown Co., Dubuque, Iowa., 1966. 660 pages.
7. "Survey of British Columbia School Children Using the Elementary School Physical Fitness Test", Pro Motion, March, 1966.

i) NAME: BANISTER, Eric Wilton

POSITION: Assistant Professor

DEPARTMENT: Physical Development Studies, Simon Fraser University,
Burnaby 2, British Columbia.

ii) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.Sc., Chemistry, 1953, University of Manchester, England.
M.P.E., Physical Education, 1962, University of British Columbia.
Ph.D., Physical Education, Physiology, 1964, University of Illinois.
F.A.C.S.M., 1967.

iii) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

Research Fellow, 1962-64, University of Illinois, Physical Education
Education Department.

Assistant Professor, 1964-67, University of British Columbia, Physical
Education Department (two graduate, two undergraduate courses).

Assistant Professor, 1967 - , Simon Fraser University, Physical
Development Studies.

1. Development of 4 step escalator for training and evaluation of working capacity.
2. Effect of training in different physical environments on athletic performance.
3. Longitudinal effects of training in middle-aged men.
4. Kinetics of strength development during training.

iv) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

Total Number: 13

1. Training for Altitude, (1966), Track Technique, 26:pp. 804-807.
2. Theories of Strength Training, (1966), Coaching Review, 4:pp. 1-3.
3. The Brachial Pulse Wave and Its Time Derivatives Variations among Athletes, Middle-Aged Men and Pathological Cases, (1966), Journal of Sports Medicine and Physical Fitness, 6:pp. 92-99.
4. Urinary Catecholamine Production among Athletes and Middle-Aged Men During Physical Activity, (1966), Proc. Int. Congress of Sports Medicine, pp. 649-657.
5. Books with S.R. Brown:
 - Ch. XI Physiological Cost of Physical Activity: Methodology of Evaluation and Relative Caloric Demands.
 - In Scientific Analysis of Physical Activity, H.B. Falls, ed., Academic Press, (in press), Autumn, 1967.
6. Caloric Cost of Handball, (1964), Research Quarterly, 35: pp. 236-240.

Dr. E. Banister - continued

7. Comparative Study of Four Exercise Programs in a School Physical Education Program, (1965), Research Quarterly, 36: pp. 387-392.
8. The Effect of Speed and Load Changes on Oxygen Intake for Equivalent Power Outputs During Bicycle Ergometry, (1967), Int. Z. angew Physiol., 24: pp 284-290.
9. The Royal Canadian 5BX Programme. A Metabolic Analysis. Canadian Medical Services Journal, (in press), 1967.
10. The Kinetics of Strength Development, Ergonomics, (submitted), 1967.
11. The Energetic Demands of Competitive Women's Figure Skating, Journal of Sports Medicine and Physical Fitness, (submitted), 1967.

) NAME: DAY, James A.P.
 POSITION: Assistant Professor
 DEPARTMENT: Physical Development Studies, Simon Fraser University,
 Burnaby 2, British Columbia.

ii) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.Ed., 1954, University of Alberta.
 M.Sc., 1965, University of Oregon.
 Ph.D., 1967, University of Oregon.

iii) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

1958 - 1963 Ponoka High School, Teacher-Coach-Intramurals-
 County Supervisor of Physical Education.
 1963-65 Graduate Studies - University of Oregon.
 1965 - Assistant Professor, Physical Development Studies,
 Simon Fraser University, Burnaby 2, B.C.

v) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

1. "A Consideration of Discontinuity of Values", with G.G. Pennington and C.D. Smith, Alberta Journal of Educational Research.
2. "A Measure of Handball Ability", with G.G. Pennington, J.F. Hansan, and J. Drowatzky, Research Quarterly, 38:2, pp. 247-253.
3. "A Statistical Analysis of the Ryhming Step Test", Research Quarterly, 38:4.
4. "Robert Tait McKenzie - Physical Education's Man of the Century", C.A.H.P.E.R., April-May, 1967, pp. 4 - 17.
5. "The Relationship of Intelligence to Selected Maturity, Physique, Strength and Motor Characteristics of Boys", paper presented to N.W.A.A.H.P.E.R., 1967.

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I) NAME: GARLAND, Iris L.

POSITION: Assistant Professor

DEPARTMENT: Physical Development Studies, Simon Fraser University,
Burnaby 2, British Columbia.

II) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.Sc., 1957, University of Illinois
M.Sc., 1960, U.C.L.A.

III) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

- 1961-1965 - Instructor, Physical Education, University of Washington, Seattle, Washington.
- 1965-1966 - Instructor, Physical Education, Simon Fraser University, Burnaby 2, B.C.
- 1966 - - Assistant Professor, Physical Development Studies, and Communications Centre (Joint appointment).

IV) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

1. "Orientation to Physical Education", J.O.H.P.E.R., April, 1967

I) NAME: ROSS, William D.
 POSITION: Assistant Professor
 DEPARTMENT: Physical Development Studies, Simon Fraser University,
 Burnaby 2, British Columbia.

II) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.P.E., Physical Education, 1951, University of British Columbia.
 M.S., Physical Education, 1954, University of Oregon.
 M.A., Physical Education, 1960, University of Oregon.
 Ph.D., Physical Education, 1962, University of Oregon.

III) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

Teaching Fellow, 1959-1961, University of Oregon, Physical Education Department.

Director of Physical Education and Assistant Dean, 1961-1962, California Maritime Academy, Physical Education Department.

Assistant Professor (Graduate Program), 1963-1966, San Diego State College, Physical Education Department.

Assistant Professor, 1966 - , Simon Fraser University, Physical Development Studies.

1. Associate Investigator, Exercise Induced Changes in Middle-Aged Males, N.I.H. grants totalling \$55,000.
2. Co-director, Anthropometric Research Training Project, U.S. Office of Education, \$18,000. grant for interdisciplinary project to train research personnel.
3. Acute Changes in Suppleness Accompanying Exercise of Middle-Aged Males, N.F.A.S. grant, \$2,000.
4. Cardiovascular Training Project II, Province of B.C. grant, \$20,000. training of middle-aged males from social welfare roles and business and professional communities.
5. Exotronic ergometric system development, Fitness Test Scoring Table for Middle-Aged Males, S.F.U. grants.
6. Accepted for post-doctoral study, University of London, Dr. J.M. Tanner and associates, April-December, 1968.

IV) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

Total Number: 16.

1. Ross, William D., Area III: Growth, Development and Aging: Section D: Influence of Activity: Component 8 Muscular Power, Encyclopedia of Sports Medicine, accepted January, 1965.
2. Ross, William D., Area III: Growth, Development and Aging: Section D: Influence of Activity: Component 9 Muscular Endurance, Encyclopedia of Sports Medicine, accepted, January, 1965.

Dr. W.D. Ross - continued

3. Kasch, Fredrick W., Phillips, William H., Ross, William D., and Carter, J.E. Lindsay, "A Step Test for Inducing Maximal Work", J. Assoc. Physical and Mental Rehabilitation, 19: 3, 84-85, 1965.
4. Kasch, Fredrick W., Phillips, William H., Ross, William D., Carter, J.E. Lindsay and Boyer, J.L., "A Comparison of Maximal Oxygen Uptake by Treadmill and Step Test Procedures", J. Applied Physiology, 21: 4, 1387-1388, July, 1966.
5. Phillips, William H., Kasch, Fredrick W., Carter, J.E. Lindsay and Ross, William D., "Maximum Oxygen Uptake in Middle-Aged Males", Journal Association Physical and Mental Rehabilitation, 19: 4, 127-129, 1965.
6. Carter, J.E. Lindsay, Ross, William D., Kasch, Fredrick W., and Phillips, William H., "Body Types of Middle-Aged Males in Training", Journal Association Physical and Mental Rehabilitation, 19: 5, 148-152, 1965.
7. Ross, William D., "The Hidden Relationship", Physical Educator, December, 1965.
8. Ross, William D., Carter, J.E. Lindsay, Kasch, Fredrick W., and Phillips, William H., "A Case Study of Fitness Differences in Two Middle-Aged Men", Journal Association Physical and Mental Rehabilitation, 19: 6, 203-205, 1965.
9. Kasch, Fredrick W., Phillips, William H., Carter, J.E. Lindsay, Ross, William D., and Boyer, J.L., "Maximum Work Capacity In Middle-Aged Males by a Step Test Method", J. Sports Medicine and Physical Fitness, Federation Internationale de Medecine Sportive, 5: 4, 1-7, 1965.
10. Phillips, William H., and Ross, William D., "Timing Error in Determining Maximal Oxygen Uptake", Research Quarterly, 38: 2, 315-316, 1967.
11. Ross, William D., "A Recreational Habits and Interests Inventory", C.A.H.P.E.R. Journal, submitted September, 1967.
12. Ross, William D., Duncan, W. Raymond, Banister, E.W., "Hearts Go To School at S.F.U.", pro Motion, submitted September, 1967.
13. Ross, William D. and Carter, J.E. Lindsay, "A Computational Procedure for Basic Descriptive and Comparative Statistics", Alberta Journal of Educational Research, submitted September, 1967.
14. Ross, William D. and Duncan, W. Raymond, "Heart Rate Monitoring of Training", Fitness for Living, accepted, October, 1967.
15. Kasch, Fredrick W., Carter, J.E. Lindsay, Phillips, William H., Ross, William D., and Boyer, J.L., "A Training Program for Middle-Aged Men", Journal Association Physical and Mental Rehabilitation, 21: 3, 102-104, 1967.
16. Carter, J.E. Lindsay, Kasch, Fredrick W., Boyer, J.L., Phillips, William H., Ross, William D., Sucec, A., "Structural and Functional Assessment of a Champion Runner - Peter Snell", Research Quarterly, November, 1967.

I) NAME: SAVAGE, Margaret V.

POSITION: Instructor

DEPARTMENT: Physical Development Studies, Simon Fraser University,
Burnaby 2, British Columbia.

II) DEGREES HELD, COURSE, YEAR, INSTITUTION

Standard Certificate, 1959, University of Washington.
B.A. (Major in P.E.), 1964, University of Washington.
M.Sc., 1965., University of Washington.

III) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

Crescent Heights High School, Calgary, Alberta, 1961-62,
Physical Education, Health, Literature.

Physical Development Studies, Simon Fraser University, 1965 - to date.
Major responsibilities in General Education and Professional
Development Program. Coordinator of Club and Intramural Program.

1. "The use of the Graph-Check Camera in the analysis of meter performance skill". (University Research Grant) - study in progress.
2. "Development of instructional loop films for selected gymnastic events", - study in progress.

IV) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

I) NAME: STRATTON, Stephen T.
POSITION: Assistant Professor
DEPARTMENT: Physical Development Studies, Simon Fraser University,
Burnaby 2, British Columbia.

II) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.P.E. (Major in P.E.), 1954, University of British Columbia.
B.Ed., 1957, University of British Columbia.
M.Sc., 1960, University of Oregon.
Ed.D., 1964, University of Oregon.

III) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

Assistant Professor of Physical Education, 1960-1964
Eastern Washington State College.

Assistant Professor, 1964-1965, George Peabody College.

Assistant Professor, 1965 - to date, Simon Fraser University.

1. Director of Physical Education Research Laboratory, George Peabody College, 1964.
2. Member, Research Team, Medford Growth Study, 1958-59.
3. Developed Physical Fitness Test Battery for College Men and Women, George Peabody College, 1964.
4. Member, Research Team, Provincial Elementary School Physical Fitness Survey, 1966.
5. Primary Investigator, "Use of Video Recording in Teaching Motor Skills", - study in progress (University Research Grant).
6. Associate Investigator, "Physical Training of Middle-Aged Males", - study in progress (National Sports and Fitness Grant).

IV) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

1. "A Level of Aspiration Test Based on Grip Strength Efforts of Nine Year Old Boys", Child Development, 33: 897-905, 1962.
2. "Physical Education and Athletics", Webster's Elementary Dictionary, Nashville, Tennessee, 1966 (25 pp.).
3. "Kinesiology Degree Program", to be submitted to J.O.H.P.E.R.
4. "Proficiency Certification Program", to be submitted to Journal of C.A.H.P.E.R.
5. "The Use of Video Recording in the Teaching of Motor Skills", to be submitted to The Canadian Audio Visual Review.

i) NAME: TOMANEK, Robert J.

POSITION: Assistant Professor

DEPARTMENT: Physical Development Studies, Simon Fraser University,
Burnaby 2, British Columbia.

ii) DEGREES HELD, COURSE, YEAR, INSTITUTION

B.Sc., Physical Education and Biology, 1959, University of Omaha.

M.A., Physical Education, 1960, University of Iowa.

Ph.D., Anatomy and Kinesiology (Department of Physical Education) -
1967, University of Iowa.

iii) EXPERIENCE (ACADEMIC AND RESEARCH WITHIN THE PAST FIVE YEARS)

Teaching Assistant, 1962-1966, University of Iowa: School for Severely
Handicapped Children, and Adaptives and Correctives (university men).

Assistant Professor, 1967 - Simon Fraser University.

1. Academic courses primarily in the areas of Anatomy, Histology and Cytology.
2. Associated with the Exercise Physiology Laboratory (animal studies).
3. Development of exercise compartments for small laboratory animals.
4. Areas of research: the effects of activity-inactivity on tissues and cells, and the relationship of age.

iv) RESEARCH PUBLICATIONS WITHIN THE PAST FIVE YEARS

1. "Influence of Physical Activity on the Strength of Knee Ligaments In Rats", American Journal of Physiology, 212: 783-787, 1967.
2. "Influence of Exercise and Tenectomy on the Morphology of a Muscle Nerve", Anatomical Record, 159: 1-10, 1967.
3. "Limb Immobilization and the Size and Number of Nerve Fibers", (In preparation).

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