OS3-01 『看護現場の安全性確保のための支援技術 / Support Technology to maintain Safety Level for Nursing Field』
企画：保坂 良資（RYOSUKE HOSAKA）湘南工科大学（Shonan Institute of Technology）
司会：保坂 良資（RYOSUKE HOSAKA）湘南工科大学（Shonan Institute of Technology）
瀬戸 僚馬（RYOMA SETO）東京医療保健大学（Tokyo Healthcare University）

OS3-01-1 医用UHF帯パッシブRFIDの電磁的安全性解析
保坂 良資（湘南工科大学 工学部 人間環境学科）
Safety Analysis for Electro Magnetic Intensity of Medical use UHF band Passive RFID System
RYOSUKE HOSAKA（Dept. of Human Environment, Fac. of Engng., Shonan Institute of Technology, Fujisawa, Kanagawa, Japan）

OS3-01-2 多職種間での病棟業務を可視化する次世代情報基盤
瀬戸 僚馬（湘南工科大学）、瀬戸 僚馬（東京医療保健大学）
Future Information Infrastructure for Visualization of Inpatient care
RYOMA SETO（Healthcare Informatics, Faculty of Healthcare, Tokyo Healthcare University, Tokyo, Japan）

OS3-01-3 看護業務への汎用携帯型端末の導入検討とその効果
脇坂 仁（防衛医科大学校病院 医療情報部）
Which is better for the hospital nurse, PC or handheld device?
HITOSHI WAKISAKA（Department of Medical Informatics, National Defense Medical College Hospital, Tokorozawa, Japan）

OS3-01-4 ナースコールの信頼性向上についての検討
酒谷 薫（日本大学 工学部 次世代工学技術研究センター 統合生体医療工学研究室）
A study on improving the reliability of nurse call system
KAORU SAKATANI（Nihon University College of Engineering, NEWCAT Institute, Laboratory of Integrative Biomedical Engineering）

OS3-01-5 UHF帯RFIDの患者ロケーション管理への適用可能性の研究
新美 則明（小林クリエイト株式会社 商品開発部 商品開発グループ）
Study of applicability to use UHF band RFID tag for location management of a patient.
NORIAKI NIIMI（Products Development Group, Products Development Dpt, Kobayashi Create Co.,Ltd., Aichi, Japan）

OS3-02 『高齢者のActive agingを支援するバイオメディカル工学 / Biomedical Engineering to Support Active Aging of Senior Citizen』
企画：酒谷 薫（KAORU SAKATANI）日本大学（Nihon University）
司会：酒谷 薫（KAORU SAKATANI）日本大学（Nihon University）
陳 文西（WENXI CHEN）会津大学（The University of Aizu）

OS3-02-1 Active agingを支援する高齢者の脳と心の健康増進
酒谷 薫（日本大学 工学部 次世代工学技術研究センター 統合生体医療工学研究室）
Health promotion of Mind and Brain of the aged for supporting active aging
KAORU SAKATANI（Nihon University College of Engineering, NEWCAT Institute, Laboratory of Integrative Biomedical Engineering）

OS3-02-2 Active agingを支援する脳機能解析の開発：NIRSの安靜時データを用いた心理状態の推定法
松本 隆（早稲田大学 先進理工学術研究科 電気・情報生命専攻）
A Brain Function Analysis Method for Active Aging: Mental State Estimation from NIRS Data at Resting Condition
TAKASHI MATSUMOTO（Department of Electrical Engineering and Bioscience, Graduate School of Advanced Science and Engineering, Waseda University, Tokyo, Japan）

OS3-02-3 高齢社会における化粧セラピーへの期待
谷田 正弘（資生堂リサーチセンター）
Expectations for cosmetic therapy in aged society
MASAHIRO TANIDA（Shiseido Research Center, Yokohama, Japan）
OS3-02-4 パーソナルヘルスケアデバイスと新しい社会サービスが支援する幸福な老いとは
谷田部淳一（福島県立医科大学医学部慢性腎臓病(CKD)病態治療学講座 / 福島県立医科大学医学部薬理学講座 / 福島県立医科大学医学部腎臓高血圧・糖尿病内分泌代謝内科学講座）
Personal devices for health care and new social services to support happy aging
JUNICHI YATABE (Fukushima Medical University, Department of Chronic Kidney Disease Initiatives / Fukushima Medical University, Department of Pharmacology / Fukushima Medical University, Department of Nephrology, Hypertension, Diabetology, Endocrinology, and Metabolism)

OS3-02-5 老人ホーム高齢入居者の睡眠習性の全自動モニタリングシステム
陳 文西（会津大学 生体情報学講座 先端情報科学研究センター）
A Fully Automatic Network-based System for Monitoring Sleep Behaviors of Elderly Residents in Nursing Homes
WENXI CHEN (Biomedical Information Technology Lab., Research Center for Advanced Information Science and Technology, The University of Aizu, Aizu-wakamatsu, Japan)
OS3-02-1 Active agingを支援する高齢者の脳と心の健康増進
○酒谷 薫
日本大学 工学部 次世代工学技術研究センター 統合生体医療工学研究室
Health promotion of Mind and Brain of the aged for supporting active aging
○Kaoru Sakatani
Nihon University College of Engineering, NEWCAT Institute, Laboratory of Integrative Biomedical Engineering

The World Health Organization (WHO) has adopted the term “active ageing” in the late 1990s to refer to continuing participation in social, economic, cultural, spiritual and civic affairs (WHO, 2002). In order to support active ageing, we have developed health promotion methods of mind and brain of the aged employing 2 channel NIRS, and evaluated the effect of mental stress, relaxation, and the effect of exercise on working memory. We found the right dominant activity of the prefrontal cortex (PFC) showed larger stress responses of autonomic nervous system and neuroendocrine system compared with the left dominant activity. Relaxation by fragrance reduced the stress response in association with changes in the stress-induced prefrontal cortex activity. Exercise increased working memory performance associated with increases of PFC activity during working memory tasks. Two-channel NIRS may be able to evaluate a stress state and a cognitive function objectively.

OS3-02-2 Active agingを支援する脳機能解析の開発：NIRSの安静時データを用いた心理状態の推定法
○松本 隆、福田 行克、竹村 尚大、酒谷 薫
早稲田大学 先進理工学研究科 電気・情報生命専攻
A Brain Function Analysis Method for Active Aging: Mental State Estimation from NIRS Data at Resting Condition
○Takashi Matsumoto, Yukikatsu Fukuda, Naohiro Takemura, Kaoru Sakatani
Department of Electrical Engineering and Bioscience, Graduate School of Advanced Science and Engineering, Waseda University, Tokyo, Japan, Nihon University, Koriyama, Fukushima, Japan

We have recently proposed a new information criterion LIR (Laterality Index at Rest) defined in terms of oxy Hemoglobin concentration changes from the right and left PFC. This information criterion consists of the difference of the right and left oxy Hemoglobin concentration changes summed over the analysis period normalized in such a way that the resulting value falls within the interval [-1,+1]. In a previous study, we demonstrated that there is a positive correlation between LIR and STAI-1 (State Anxiety of State-Trait Anxiety Inventory). There were at least two issues to be improved:(i) The number of data was small.(ii) Parametric form of the distribution of Pearson Correlation Coefficient was difficult to obtain.In this study, we used the bootstrap algorithm to improve the above issues. We have also examined if there is any distinction between young and old subjects as well as between male and female subjects.
A Fully Automatic Network-based System for Monitoring Sleep Behaviors of Elderly Residents in Nursing Homes

WENXI CHEN
Biomedical Information Technology Lab., Research Center for Advanced Information Science and Technology, The University of Aizu, Aizu-wakamatsu, Japan

This study presents a fully automatic system for monitoring sleep behaviors of elders. The system consists of multiple user terminals and a remote server array. User terminals were deployed in nursing homes to measure ballistocardiographic signal from elderly residents during daily sleep. The user terminal includes a sensor board, an environmental sensor box and a bedside box. The sensor board utilizes a piezoelectric cell which is sandwiched between two acrylic boards, and is installed beneath the pillow or the mattress. Ballistocardiographic data and environmental parameters are transmitted to the server array by the bedside box, which operation is initiated and terminated automatically when the elder is going to bed at night and getting up in the morning. An algorithm server analyzes the data to derive various sleep behaviors such as characteristic sleep times, sleep stages and sleep quality. These outcomes are further linked to health condition change and disease development.