これらの知見は限定的な地域からのものであるが，プログラムそのものは一般的なセッティング（対象者や実施場所など）で発展してきたものであり，他地域にも拡張可能である。

紹介した介入研究事例から，ソーシャル・キャピタルを醸成する地域介入を実行するためのいくつかのヒントを得た。まず第一に，対象集団は限定すべきではない。急速な高齢化は国全体の問題であるが，実際の地域は複数の世代が集まって構成されている。結果的に，ターゲットとする高齢世代だけでなく，他世代にも効果が波及することは望ましいアウトカムの一つといえる。第二に，介入の単位についてである。りぷりんとプログラムは学校（とくに小学校）を基盤とした介入プログラムであり，武豊プログラムは自治体レベルでの介入プログラムであった。地域（あるいは地区，近隣）のサイズによるソーシャル・キャピタルの文脈効果の変動は今後検討されるべきであるが，介入単位が大きくなれば，人々のつながりや関係性は薄まり，介入効果が減弱していく可能性がある。したがって介入単位は，地域住民の日常生活や交流の範囲，あるいは地域（地区，近隣）として一般に認識されている範囲によって規定されるほうがよいだろう。第三に，プログラムのセッティングである。前述のように，二つの介入研究事例は決して特別なものではなく，地域に存在する一般的なリソース（例として小学校）を活用したものであった。通常，新しくはじめるプログラムのためにセッティングを特別に準備しようとすると，多くの時間と労力が必要になる。そのため，ソーシャル・キャピタルの醸成をめざしたプログラムでは，セッティングとして，皆がよく知っていて，身近な場所を利用することがもっとも確実でより効果的である。

今後，ソーシャル・キャピタルを醸成するための地域介入プログラムを成功に導くヒントがさらに明らかになっていくであろう。今回の例以外にも，地域介入プログラムを検討・分析し，世界中から知見を集積していく必要がある。このようなプログラムは健康長寿社会を築く際の潜在的可能性をもっている。プログラムを促進・発展させていくためには，介入研究のエビデンス構築は喫緊の課題として最優先されるべきである。

〈参考文献〉

Aida, J., Kondo, K., Hirai, H., Subramanian, S. V., Murata, C., Kondo, N., et al. (2011). Assessing the association between all-cause mortality and multiple aspects of individual social capital among the older Japanese. *BMC Public Health*, 11:499.

Baum, F. E. (2003). The effectiveness of community-based health promotion in Healthy Cities programmes. In T. Takano (Ed.), *Healthy Cities & Urban Policy Research*. London: Spon Press, pp.104-130.

Baum, F. E. & Palmer, C. (2002). 'Opportunity structures': Urban landscape, social capital and health promotion in Australia. *Health Promotion International*, 17:351-361.

Baum, F. E. & Ziersch, A. M. (2003). Social capital. *J Epidemiol Community Health*, 57 (5):320-323.

Blakely, T., Atkinson, J., Ivory, V., Collings, S., Wilton, J., & Howden-Chapman, P. (2006). No association of neighbourhood volunteerism with mortality in New Zealand: A national multilevel cohort study. *Int J Epidemiol*, 35(4):981-989.

Bland, J. M. (2004). Cluster randomised trials in the medical literature: Two bibliometric surveys. *BMC Med Res Methodol*, 4:21.

Blomgren, J., Martikainen, P., Mäkelä, P., & Valkonen, T. (2004). The effects of regional characteristics on alcohol-related mortality: A register-based multilevel analysis of 1.1 million men. *Soc Sci Med*, 58(12):2523-2535.

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *The Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood Press, pp.241-258.

Breny Bontempi, J. M., Fagen, M. C., & Roe, K. M. (2010). Implementation tools, program staff, and budgets. In C. I. Fertman, & D. D. Allensworth (Eds.), *Health promotion programs: From theory to practice*. San Francisco: Jossey-bass, pp.153-179.

Burke, W. J., Roccaforte, W. H., & Wengel, S. P. (1991). The short form of the Geriatric Depression Scale: A comparison with the 30-item form. *J Geriatr Psychiatry Neurol*, 4(3):173-178.

Desai, R. A., Dausey, D. J., & Rosenheck, R. A. (2005). Mental health service delivery and suicide risk: The role of individual patient and facility factors. *Am J Psychiatry*, 162(2):311-318.

de Souza, E. M. & Grundy, E. (2007) Intergenerational interaction, social capital and health: Results from a randomised controlled trial in Brazil. *Soc Sci Med*, 65(7):1397-1409.

Erikson, E. H. (1982). *The Life Cycle Completed: A review*. New York: WW Norton.

Fried, L. P., Carlson, M. C., Freedman, M., Frick, K. D., Glass, T. A., Hill, J., et al. (2004). A social model for health promotion for an aging population: Initial evidence on the Experience Corps model. *J Urban Health*, 81(1):64-78.

Fujiwara, T. & Kawachi, I. (2008). A prospective study of individual-level social capital and major depression in the United States. *J Epidemiol Community* Health, 62(7): 627-633.

Fujiwara, T., Natsume, K., Okuyama, M., Sato, T., & Kawachi, I. (2012). Do home-visit

programs for mothers with infants reduce parenting stress and increase social capital in Japan? *J Epidemiol Community Health*, 66(12):1167-1176.

Fujiwara, Y., Shinkai, S., Kumagai, S., Amano, H., Yoshida, Y., Yoshida, H., et al. (2003a). Longitudinal changes in higher-level functional capacity of an older population living in a Japanese urban community. *Arch Gerontol Geriatr*, 36(2):141-153.

Fujiwara, Y., Shinkai, S., Kumagai, S., Amano, H., Yoshida, Y., Yoshida, H., et al. (2003b). Changes in TMIG-Index of Competence by subscale in Japanese urban and rural community older populations: Six year prospective study. *Geriatr Gerontol Int*, 3:S63-68.

藤原佳典，杉原陽子，新開省二（2005）．ボランティア活動が高齢者の心身の健康に及ぼす影響：地域保健福祉における高齢者ボランティアの意義．日本公衆衛生雑誌，52:293-307.

藤原佳典，西真理子，渡辺直紀，李相侖，井上かず子，吉田裕人，他（2006）．都市部高齢者による世代間交流型ヘルスプロモーションプログラム："REPRINTS" の1年間の歩みと短期的効果．日本公衆衛生雑誌，53:702-714.

藤原佳典，渡辺直紀，西真理子，李相侖，大場宏美，吉田裕人，他（2007）．児童の高齢者イメージに影響をおよぼす要因："REPRINTS" 高齢者ボランティアとの交流頻度の多寡による推移分析から．日本公衆衛生雑誌，54:615-625.

Fujiwara, Y., Sakuma, N., Ohba, H., Nishi, M., Lee, S., Watanabe, N., et al. (2009). REPRINTS: effects of an intergenerational health promotion program for older adults in Japan. *Journal of Intergenerational Relationships*, 7:17-39.

藤原佳典，渡辺直紀，西真理子，大場宏美，李相侖，小宇佐陽子，他（2010）．高齢者による学校支援ボランティア活動の保護者への波及効果：世代間交流型ヘルスプロモーションプログラム "REPRINTS" から．日本公衆衛生雑誌，57:458-466.

Giordano, G. N. & Lindström, M. (2010). The impact of changes in different aspects of social capital and material conditions on self-rated health over time: A longitudinal cohort study. *Soc Sci Med*, 70(5):700-710.

Glass, T. A. (2000). Psychological intervention. In L. F. Berkman, & I. Kawachi (Eds.), *Social Epidemiology*. New York: Oxford University Press, pp.267-305.

Glass, T. A., Freedman, M., Carlson, M.C., Hill, J., Frick, K.D., Ialongo, N. et al. (2004). Experience Corps: Design of an intergenerational program to boost social capital and promote the health of an aging society. *J Urban Health*, 81(1):94-105.

Guttmacher, S., Kelly, P. J., & Ruiz-Janecho, Y. (2010). *Community-based Health Interventions*. San Francisco: Jossey-bass.

Hampshire, K. R. & Matthijsse, M. (2010). Can arts projects improve young people's wellbeing? A social capital approach. *Soc Sci Med*, 71(4):708-716.

平井寛（2009）．介護予防におけるポピュレーションアプローチの試み：武豊町における地域サロン事業の計画と実施．地域リハ，4:428-431.

平井寛（2010）．高齢者サロン事業参加者の個人レベルのソーシャル・キャピタル指標の変化．農村計画学会誌，28:201-206.

平井寛＆近藤克則（2007）．高齢者の「閉じこもり」に関する文献学的研究：研究動向と定義・コホート研究の検討．日本公衆衛生雑誌，54:293-303.

平井寛＆近藤克則（2008a）．介護予防プログラムの開発と評価：「閉じこもり」予防事業武豊モデル．二木立編，福祉社会開発学．京都：ミネルヴァ書房，pp.174-182.

平井寛＆近藤克則（2008b）．高齢者の町施設利用の関連要因分析：介護予防事業参加促進にむけた基礎的研究．日本公衆衛生雑誌，55:37-45.

平井寛，近藤克則，＆埴淵知哉（2008c）．高齢者の「閉じこもり」割合と居住地の人口密度の関連の検討．老年社会科学，30:69-78.

平井寛，近藤克則，尾島俊之，＆村田千代栄（2009）．地域在住高齢者の要介護認定のリスク要因の検討：AGESプロジェクト3年間の追跡研究．日本公衆衛生雑誌，56:501-512.

平井寛＆近藤克則（2011）．住民ボランティア運営型地域サロンによる介護予防事業のプロジェクト評価．季刊社会保障研究，46:249-263.

Hyyppä, M.T., Mäki, J., Impivaara, O., & Aromaa, A. (2007). Individual-level measures of social capital as predictors of all-cause and cardiovascular mortality: A population-based prospective study of men and women in Finland. *Eur J Epidemiol*, 22(9):589-597.

Ichida, Y., Kondo, K., Hirai, H., Hanibuchi, T., Yoshikawa, G., & Murata, C. (2009). Social capital, income inequality and self-rated health in Chita peninsula, Japan: A multilevel analysis of older people in 25 communities. *Soc Sci Med*, 69(4):489-499.

Islam, M.K., Gerdtham, U.G., Gullberg, B., Lindström, M., & Merlo J. (2008). Social capital externalities and mortality in Sweden. *Econ Human Biol*, 6(1):19-42.

Jones, L., Lu, M. C., Lucas-Wright, A., Dillon-Brown, N., Broussard, M., Wright, K., et al. (2010) One Hundred Intentional Acts of Kindness toward a Pregnant Woman: Building reproductive social capital in Los Angeles. *Ethn Dis*, 20(1 Suppl 2):36-40.

Kawachi, I. (2006). Commentary: Social capital and health: Making the connections one step at a time. *Int J Epidemiol*, 35(4):989-993.

Kawachi, I. & Berkman, L. F. (2000). Social Cohesion, Social Capital, and Health. In L. F. Berkman, & I. Kawachi (Eds.), *Social Epidemiology*. New York: Oxford University Press, pp.174-190.

Kawachi, I., Subramanian, S. V., & Kim, D. (2008). Social capital and health: A decade of progress and beyond. In I. Kawachi, S. V. Subramanian, & D. Kim (Eds.), *Social Capital and Health*. New York: Springer, pp.1-26.

国立社会保障・人口問題研究所（2008）．日本の世帯数の将来推計：2005（平成17）年～2030（平成42）年．東京：厚生労働統計協会．

Kondo, K. (Ed.), (2010). *Health Inequalities in Japan: An Empirical Study of Older People*. Trans Pacific Press, Melbourne.

近藤克則，平井寛，竹田徳則，市田行信，＆相田潤（2010）．ソーシャル・キャピタルと健康．行動計量学，37:27-37.

Kondo, N., Minai, J., Imai, H., & Yamagata, Z. (2007). Engagement in a cohesive group and higher-level functional capacity in older adults in Japan: A case of the Mujin. *Soc Sci Med*, 64(11):2311-2323.

Kouvonen, A., Oksanen, T., Vahtera, J., Väänänen, A., De Vogli, R., Elovainio, M., et al. (2008). Work-place social capital and smoking cessation: The Finnish Public Sec-

tor Study. *Addiction*, 103(11):1857-1865.
Koyano, W., Shibata, H., Nakazato, K., Haga, H., & Suyama, Y. (1991). Measurement of competence: Reliability and validity of the TMIG Index of Competence. *Arch Gerontol Geriatr*, 13(2):103-116.
Lin, N. (1999). Building a network theory of social capital. *Connections*, 22:28-51.
Liukkonen, V., Virtanen, P., Kivimäki, M., Pentti, J., & Vahtera, J. (2004). Social capital in working life and the health of employees. *Soc Sci Med*, 59(12):2447-2458.
Lofors, J. & Sundquist, K. (2007). Low-linking social capital as a predictor of mental disorders: A cohort study of 4.5 million Swedes. *Soc Sci Med*, 64(1):21-34.
Machinko, J. & Starfield, B. (2001). The utility of social capital in research on health determinants. *Milbank Quarterly*, 79:387-427.
増地あゆみ & 岸玲子 (2001). 高齢者の抑うつとその関連要因についての文献的考察：ソーシャルサポート・ネットワークとの関連を中心に. 日本公衆衛生雑誌, 48:435-448.
Mitchell, C. U. & LaGory, M. (2002). Social capital and mental distress in and impoverished community. *City Community*, 1:199-222.
Mohan, J., Twigg, L., Barnard, S., & Jones, K. (2005). Social capital, geography and health: A small-area analysis for England. *Soc Sci Med*, 60(6):1267-1283.
Morrow-Howell, N., Hinterlong, J., & Sherraden, M. (Eds.). (2001). *Productive Aging: Concepts and Challenges*. Baltimore: Johns Hopkins University Press.
Murayama, H., Shibui, Y., Fukuda, Y., & Murashima, S. (2011). A new crisis in Japan: Social isolation in old age. *Journal of the American Geriatrics Society*, 59:2160-2162.
Murayama, H., Fujiwara, Y., & Kawachi, I. (2012). Social capital and health: A review of prospective multi-level studies. *J Epidemiol*, 22(3):179-187.
Murayama, H., Taguchi, A., Ryu, S., Nagata, S., & Murashima, S. (2012). Institutional trust in the national social security and municipal healthcare systems for the elderly in Japan: A cross-sectional study. *Health Prom Int*, 27(3):394-404.
Murayama, H., Wakui, T., Arami, R., Sugawara, I., & Yoshie, S. (2012). Contextual effect of different components of social capital on health in a suburban city of the greater Tokyo area: A multilevel analysis. *Soc Sci Med*, 75(12):2472-2480.
Murray, D. M., Varnell, S. P., & Blitstein, J. L. (2004). Design and analysis of group-randomized trials: A review of recent methodological developments. *Am J Public Health*, 94(3):423-432.
中谷陽明 (1991). 児童の老人観：老人観スケールによる測定と要因分析. 社会老年学, 34:13-22.
Nishi, A., Kondo, K., Hirai, H., & Kawachi., I. (2011). Cohort profile: The AGES 2003 cohort study in Aichi, Japan. *J Epidemiol*, 21(2):151-157.
Oksanen, T., Kouvonen, A., Kivimäki, M., Pentti, J., Virtanen, M., Linna, A., et al. (2008). Social capital at work as a predictor of employee health: Multilevel evidence from work units in Finland. *Soc Sci Med*, 66(3):637-649.
Oksanen, T., Kouvonen, A., Vahtera, J., Virtanen, M., & Kivimäki, M. (2010). Prospective study of workplace social capital and depression: Are vertical and horizontal components equally important? *J Epidemiol Community Health*, 64(8):684-689.

Oksanen, T., Kivimäki, M., Kawachi, I., Subramanian, S. V., Takao, S., Suzuki, E., et al. (2011). Workplace social capital and all-cause mortality: A prospective cohort study of 28,043 public-sector employees in Finland. *Am J Public Health*, 101(9):1742-1748.
Ottesen, L., Jeppesen, R. S., & Krustrup, B. R. (2010). The development of social capital through football and running: Studying an intervention program for inactive women. *Scand J Med Sci Sports*, 20(Suppl 1):118-131.
Palmore, E. B., Branch, L., & Harris, D. K. (Eds.), (2005). *Encyclopedia of ageism* (*Religion and Mental Health*). New York: Haworth Press, Inc.
Price, J. H., Dake, J. A., & Ward, B. (2010). Assessing the needs of program participants. In C. I. Fertman, & D. D. Allensworth (Eds.), *Health Promotion Programs: From Theory to Practice*. San Francisco: Jossey-bass, pp.91-119.
Pronyk, P. M., Harpham, T., Busza, J., Phetla, G., Morison, L. A., Hargreaves, J. R., et al. (2008). Can social capital be intentionally generated? A randomized trial from rural South Africa. *Soc Sci Med*, 67(10):1559-1570.
Rebok, G. W., Carlson, M. C., Glass, T. A., McGill, S., Hill, J., Wasik, B. A., et al. (2004). Short-term impact of Experience Corps participation on children and schools: Results from a pilot randomized trial. *J Urban Health*, 81(1):79-93.
Rosenberg, M. (1979). *Conceiving the Self*. New York: Basic Books.
Ryff, C. D. & Singer, B. (1996). Psychological well-being: Meaning, measurement and implications for psychotherapy research. *Psychother Psychosom*, 65(1):14-23.
笹沼澄子 (1988). 健常老人および痴呆老人における高次脳機能検査の成績. 老年精神医学, 5:503-516.
Schreiner, A. S., Hayakawa, H., Morimoto, T., & Kakuma, T. (2003). Screening for late life depression: Cut-off scores for the Geriatric Depression Scale and the Cornell Scale for Depression in Dementia among Japanese subjects. *Int J Geriatr Psychiatry*, 18(6):498-505.
Snelgrove, J. W., Pikhart, H., & Stafford, M. (2009). A multilevel analysis of social capital and self-rated health: Evidence from the British Household Panel Survey. *Soc Sci Med*, 68(11):1993-2001.
Stuck, A. E., Walthert, J. M., Nikolaus, T., Büla, C. J., Hohmann, C., & Beck, J. C. (1999). Risk factors for functional status decline in community-living elderly people: A systematic literature review. *Soc Sci Med*, 48(4):445-469.
Sundquist, J., Johansson, S. E., Yang, M., & Sundquist, K. (2006). Low linking social capital as a predictor of coronary heart disease in Sweden: A cohort study of 2.8 million people. *Soc Sci Med*, 62(4):954-963.
Szreter, S. & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *Int J Epidemiol*, 33(4):650-667.
竹田徳則，近藤克則，& 平井寛 (2009). 心理社会的因子に着目した認知症予防のための介入研究：ポピュレーション戦略に基づく介入プログラム理論と中間アウトカム評価. 作業療法, 28:178-186.

竹田徳則，近藤克則，& 平井寛（2010）．地域在住高齢者における認知症を伴う要介護認定の心理社会的危険因子：AGES プロジェクト 3 年間のコホート研究．日本公衆衛生雑誌 57:1054-1065.

Väänänen, A., Kouvonen, A., Kivimäki, M., Oksanen, T., Elovainio, M., Virtanen, M., et al. (2009). Workplace social capital and co-occurrence of lifestyle risk factors: the Finnish Public Sector Study. *Occup Environ Med,* 66(7):432-437.

綿森淑子，原寛美，宮森孝史，& 江藤文夫（2002）．日本版 RBMT リバーミード行動記憶検査．東京：千葉テストセンター．

Webber, M., Huxley, P., & Harris, T. (2011). Social capital and the course of depression: Six-month prospective cohort study. *J Affect Disord,* 129(1-3):149-157.

Wen, M., Cagney, K. A., & Christakis, N. A. (2005). Effect of specific aspects of community social environment on the mortality of individuals diagnosed with serious illness. *Soc Sci Med,* 61(6):1119-1134.

W. K. Kellogg Foundation. (2004). *Logic Model Development Guide.* MI: Author.

Wu, Q., Xie, B., Chou, C. P., Palmer, P. H., Gallaher, P. E., & Johnson, C. A. (2010). Understanding the effect of social capital on the depression of urban Chinese adolescents: An integrative framework. *Am J Community Psychol,* 45(1-2):1-16.

柳田邦男（2004）．砂漠でみつけた一冊の絵本．東京：岩波書店．

吉井清子，近藤克則，久世淳子，& 樋口京子（2005）．地域在住高齢者の社会関係の特徴とその後 2 年間の要介護状態発生との関連性．日本公衆衛生雑誌，52:456-467.

Ziersch, A. M. & Baum, F. E. (2004). Involvement in civil society groups: Is it good for your health? *J Epidemiol Community Health,* 58(6):493-500.

第10章
マイクロファイナンスと健康

近藤尚己，白井こころ

互助的な関係を築き，育むことは，ヒトに本来的に備わっている特性である。生き残るため，あるいは暮らしをより良くするために行われてきた互助活動の実例は数限りない。そうした実例の中でも特筆すべきものに，回転型貯蓄金融講（rotating savings and credit association；ROSCA）やマイクロクレジットなどの，いわゆる「マイクロファイナンス」がある。ROSCA は，少人数が定期的に寄り合って一定額を拠出し，集まったお金を順番に毎回 1 人に供与することで経済的に支援しあう活動である。銀行制度をはじめとする近代的な金融システムが発展する以前には世界中にみられ，主に低所得者層のコミュニティで行われていた。また，今でも，発展途上国を中心に，世界各国で行われている。近年，爆発的な広がりをみせているマイクロクレジットも，互助的な要素を多分に含む金融活動として注目に値する。マイクロクレジットは，貧困層向けの，小額の無担保での貸し付けプログラムであり，多くは政府系あるいは非政府系の機関によって運営されている。

ROSCA とマイクロクレジットは，ともに貧困解決と経済開発の「特効薬」として，これまで多くの研究者や活動家を魅了してきた。両者とも，固

Ichiro Kawachi • Soshi Takao
S.V. Subramanian
Editors

Global Perspectives on Social Capital and Health

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Chapter 9
Social Capital Interventions to Promote Healthy Aging

Hiroshi Murayama, Katsunori Kondo, and Yoshinori Fujiwara

Our rapidly aging population is a worldwide issue in the twenty-first century. In 2010, the total world population was approximately 6.9 billion, and the proportion of people aged 65 or older was 7.6 %. By 2060, it is estimated that the world's population will surpass 9.6 billion, and 18.3 % of the population will be aged 65 or older. In particular, currently 15.9 % of the population in developed countries is aged, but by 2060, that number is predicted to rise to 26.2 % (Fig. 9.1).

Geometric growth in the size of the elderly population will present a challenge for researchers and policymakers alike. In Japan, which has the fastest graying population in the world, a number of challenges have emerged: financial crunches in medical and long-term care, an increasing number of elderly households and elderly living alone (National Institute of Population and Social Security Research, 2008), anxiety relating to receiving necessary care (Murayama, Taguchi, Ryu, Nagata, & Murashima, 2012), and social isolation and solitary death (Murayama, Shibui, Fukuda, & Murashima, 2011). How will nations afford the social and monetary costs of a rapidly aging population? How should nations allocate limited resources? These challenges have led researchers and policymakers to focus on the

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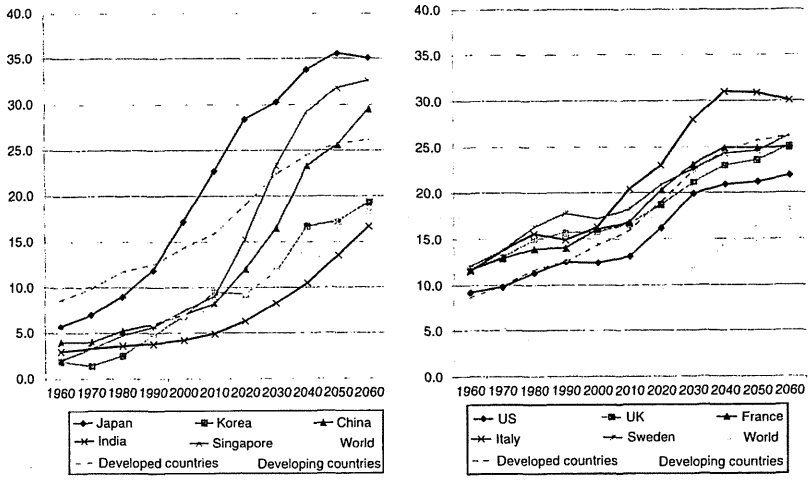

Fig. 9.1 Predicted trends of worldwide population aging. *Left*: Asian countries. *Right*: Western countries (*Source*: United Nations, World Population Prospects: The 2010 Revision)

critical need to prevent and delay age-related diseases and disabilities. In fact, delaying the onset of disease and disability will, theoretically, lead to the "compression of morbidity," resulting in progressively smaller portions of a person's lifespan lived in a state of illness and dependency. However, there are many possible risks for the onset of disease and disability (Stuck et al., 1999), and therefore, it would not be efficient or realistic for health policymakers to deal with various individual risks for disease and disability. At the same time, it would be inefficient to target at-risk individuals (high-risk strategy). In a rapidly aging world, the strategy that should be awarded a higher priority in relation to funds and resource allocation is a "population-based approach," which can target the broader population and become embedded within the social and physical structures of community function. This approach will require new policies to address or correct significant shortfalls in housing, education, employment, income, neighborhood environment, and, of course, social capital.

In this chapter, we will review evidence on interventions conducted in Japan that have leveraged the concept of social capital to improve health outcomes among aging populations. We will describe evidence from model interventions that attempted to boost social capital by promoting intergenerational interaction between seniors and schoolchildren [*RE*search of *PR*oductivity by *INT*ergenerational *S*ympathy (REPRINTS)] and that promoted social interaction among the elderly within a municipality (the Taketoyo Project).

9.1 Introduction

The effectiveness and efficiency of community-based health promotion programs vary depending on their context and location, even when the programs have a similar design. Such variation may be due to differences in the background characteristics of the settings in which the interventions are conducted. One such characteristic is "social capital," a concept that has been used in recent years to explain health disparities. Social capital is one possible theoretical basis for assessing the impact that community-based health promotion programs have on the broader health and life of a community (Baum, 2003).

The existing literature highlights two distinct concepts of social capital (Kawachi, 2006). One states that social capital represents the resources available to members of tightly knit communities. This interpretation could be defined as social cohesion definition. This form of social cohesion tends to emphasize social capital as a group attribute and to analyze it as a contextual influence on individual health. In contrast, Bourdieu (1986) defined social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition," which focuses on the resources of individuals (Baum & Ziersch, 2003). Moreover, the network theory of social capital defines the concept in terms of resources that are embedded within an individual's social networks that is defined as the property of individuals (Lin, 1999).

Prospective epidemiological studies suggest robust evidence supporting the effect of social capital on health. The existence of multiple programs leveraging the concept of social capital as improving health outcomes is testament to this. We will introduce several prospective studies regarding both individual-level and community-level social capital and health in the following section.

9.2 Prospective Effect of Social Capital on Health

9.2.1 Individual-Level Social Capital

We identified several cohort studies that examined the influence of individual-level social capital on health outcomes. These studies generally demonstrate the protective effects of social capital on adverse health outcomes, although each study used varying social capital indicators such as participation in group activities, voting participation, social networks, and social trust.

A Finnish population-based survey by Hyyppä, Mäki, Impivaara, and Aromaa (2007) defined three types of individual social capital by factor analysis (leisure participation, interpersonal trust, and residential stability). In relation to all-cause mortality, active leisure participation performed a protective function for men. For women, both active leisure participation and high interpersonal trust levels were

found to be important. A Japanese cohort study of community-dwelling elderly by Aida et al. (2011) reported that lower friendship network levels were associated with all-cause mortality in men and women. Lower general trust levels reduced all-cause mortality but only in women. These contrasting findings suggest the importance of considering the influence of different cultural backgrounds on social capital studies.

In addition to mortality, several prospective research projects both in community and workplace settings examined the relationship between individual social capital and health outcomes including self-rated health (Giordano & Lindstrom, 2010; Liukkonen, Virtanen, Kivimäki, Pentti, & Vahtera, 2004), health-related behavior (Kouvonen et al., 2008; Väänänen et al., 2009), and depression (Fujiwara & Kawachi, 2008; Oksanen, Kouvonen, Vahtera, Virtanen, & Kivimäki, 2010; Webber, Huxley, & Harris, 2011; Wu et al., 2010). Kondo, Minai, Imai, and Yamagata (2007) confirmed that higher levels of engagement in a cohesive group (a traditional Japanese rotating saving and credit association known as Mujin; see Chap. 10) positively affected greater functional capacity among the elderly.

9.2.2 *Community-Level Social Capital*

In social cohesion theory, social capital is a contextual concept which emphasizes social capital as a group attribute. Machinko and Starfield (2001) identified four analytic levels in the association between social capital and health: the macro level (countries, states, regions, and local municipalities), meso level (neighborhoods and blocks), microlevel (social networks and social participants), and individual psychological level (trust and norm). To examine the influence of the contextual effect of social capital on individual health outcomes over and above the individual effect, a multilevel approach needs to be adopted in studies of social capital and health. Murayama, Fujiwara, and Kawachi (2012) reviewed prospective multilevel analytic studies of the association between social capital and health and highlighted a number of trends.

Studies of all-cause mortality reported both positive and negative contextual effects of social capital. Mohan, Twigg, Barnard, and Jones (2005) reported that less engagement in neighborhood activity was associated with all-cause mortality. In contrast, a study conducted in Chicago found that the higher density of community social networks had a detrimental effect on mortality, although community collective efficacy had a protective association (Wen, Cagney, & Christakis, 2005). In a study in New Zealand, Blakely et al. (2006) found no association between neighborhood social capital (proportion of participation in unpaid voluntary activities in the neighborhood) and all-cause mortality. Regarding cause of death, some studies indicated evidence of the protective effect of community-level social capital: suicide (Desai, Dausey, & Rosenheck, 2005), alcohol-related mortality (Blomgren, Martikainen, Mäkelä, & Valkonen, 2004), and cancer-related mortality (Islam,

Gerdtham, Gullberg, Lindström, & Merlo, 2008). Some studies revealed the effect of community-level social capital on hospitalization. The contextual protective effects of social capital (voting participation rate in small administrative area units) were demonstrated in hospitalizations for coronary heart disease and psychosis (Lofors & Sundquist, 2007; Sundquist, Johansson, Yang, & Sundquist, 2006), but no association was found for hospitalizations due to depression (Lofors & Sundquist, 2007). Regarding self-rated health, after adjustment for sociodemographic characteristics and health-related behaviors, one study found that both high individual- and area-level social trust were inversely associated with poor self-rated health, but civic participation was not associated with individual or area levels (Snelgrove, Pikhart, & Stafford, 2009).

In addition to a community-based setting, some studies discussed the contextual effect of social capital on health in a workplace setting using prospective data. Using a prospective cohort study on public-sector employees in Finland, a Finnish group established that self-assessed workplace social capital decreased the risk of all-cause mortality (Oksanen et al., 2011). Additionally, lower levels of workplace social capital were associated with poor self-rated health (Oksanen et al., 2008).

Our review indicates that individual-level and community-level social capital generally appears to have positive effects on health outcomes, although the studies varied with regard to participants, setting (including country), follow-up period, and variables used such as social capital and health outcomes. However, we can suggest some research perspectives which future studies should tackle. Studies focusing on the effect of social capital on the elderly are very few (in particular, there are no studies examining the prospective effect of community-level social capital.). Studies exploring the effects of social capital on elderly health are becoming increasingly necessary. Moreover, the above studies were mainly conducted in Western countries. Community-level or multilevel evidence from Asian settings was limited. In comparison to Western countries, Asian countries are facing a dramatically worsening aging crisis (see Fig. 9.1). This means that collection of evidence from Asian countries should be prioritized. In addition, social capital does not always generate a beneficial effect on health outcomes: the effect of social capital might provide a benefit for one population while disadvantaging another (Mitchell & LaGory, 2002; Ziersch & Baum, 2004). One direction for future research was suggested by a recent Japanese study which explored the effects of different components of social capital on health, using four components broken down by combination of the cognitive/structural aspect and the horizontal/vertical dimension (Murayama, Wakui, Arami, Sugawara, & Yoshie, 2012). In that study, a multilevel analysis showed that higher individual neighborhood mistrust and nonparticipation in sports, hobby, or recreation groups and higher district-level institutional mistrust (aggregated individual responses within each district) were associated with individual self-rated poor health, but higher district-level mistrust in neighbors was inversely associated with it, after adjusting for individual-level covariates. To corroborate these findings, it is expected that further research will identify dimensions of social capital that positively or negatively affect health outcomes.

9.3 Planning and Implementing an Intervention Program

The previous studies mentioned above provide important evidence about the relationship between social capital and health. Generally, analytical observational studies (i.e., cohort and case-control studies) look at the relationships between risk factors or characteristics of participants and their likelihood of contracting a particular disease or developing certain health conditions. In this case, we can understand the possibility that specific exposure regarding social capital such as civic participation and social trust would influence health conditions. In contrast, intervention studies differ from observational studies in that the investigator can assign the exposure. Different exposures can be used to determine the effectiveness of an intervention or the effectiveness of the delivery of a healthcare service. They can also be used to establish the safety, cost-effectiveness, and acceptability of an intervention.

9.3.1 Selecting the Level of an Intervention

There are two types of intervention studies: randomized controlled trials and nonrandomized or quasi-experimental trials. The randomized controlled trial is considered to be the gold standard of clinical research because it is the only known way to avoid selection and confounding biases. However, for example, in implementing a large-scale program in community settings, it is often difficult to conduct randomized controlled trials because the researchers and program staff cannot ideally control and manage all aspects of the intervention. In order to deal with this difficulty, the use of a clustered randomized trial was recommended (Bland, 2004; Murray, Varnell, & Blitstein, 2004). A cluster randomized trial involves randomizing social units or clusters of individuals rather than the individuals themselves. The two main advantages of cluster randomized trials are that study participants cannot be randomly allocated as individuals and that researchers retain control over contamination between individuals (e.g., one individual's changing behaviors may influence another individual).

A variety of approaches can be used to implement an intervention in the community setting. Using an ecological perspective, interventions can generally be classified into four levels: "individual level," "group/organizational level," "community level," and "policy level." Individual-level interventions target the individual's knowledge, attitudes, practices, and health conditions. Individuals are one of the essential units of health intervention. Health guidance based on the results of medical examinations is included at this level. Group-level or organizational-level interventions work to change not only health perceptions and health behaviors of members of a target group/organization but also the group/organizational environment that influences members' health perceptions and behaviors. This type of intervention, such as the REPRINTS program (see details in Sect. 9.5), considers a group

or an organization as a unit of intervention and uses the shared connection between individuals to build changes in health behaviors and environment. Health promotion interventions at self-help groups, schools, or worksites take place at this level. Community-level interventions, such as the Taketoyo Project (see details in Sect. 9.6 and also Chap. 4), work to change environmental or social structures, which could improve the health of the community members. Any intervention that enhances the health of people throughout a geographic community occurs at this ecological level. Policy-level interventions work to change laws or policies that will facilitate health, such as total smoking bans in the community.

Health promotion interventions that target only individual behavior have a lower-than-expected impact in health outcomes. If the intervention is to be conducted in the community and is intended to target community residents, then the broader social context must be taken into account (Glass, 2000).

9.3.2 Assessing Needs

A needs assessment provides staff (practitioners or researchers) who are planning an intervention with a road map. This helps them decide what direction to take, what intervention goals to focus on, and what objectives are necessary to reach the goal or desired end point (outcomes). Moreover, conducting a needs assessment provides an unbiased look at a target population within a particular setting and provides a foundation for the work of putting together a program that is effective and culturally appropriate in order to address identified health problems and concerns (Price, Dake, & Ward, 2010). When conducting a needs assessment, it is essential to collect and analyze various data from both primary and secondary sources and to conduct a capacity assessment of the target settings. In partnership with the advisory board, program participants, staff, and stakeholders develop a working group. This consists of different types of stakeholders who can establish program priorities and build networks in order to maximize program support in subsequent program planning decisions as well as during program implementation and evaluation (Guttmacher, Kelly, & Ruiz-Janecho, 2010).

9.3.3 Action Planning

While the overall aim of an intervention remains the same throughout the program period, objectives of specific activities within the intervention must be set individually. In this stage, the staff must move from program planning to action planning. One of the most critical steps in the planning process is the creation of practical and specific "action plans" (Breny Bontempi, Fagen, & Roe, 2010). These practical documents are based on the program's goals, objectives, and interventions and provide a summary of how the program needs to progress in order to achieve the desired

outcomes (including concrete activities, contact personnel, and time frames). Once developed, the action plan helps staff members track progress, adapt to change, and document accountability as the program unfolds.

Preparing a logic model is also useful in implementing action planning. A logic model is a visual depiction of the underlying logic of a planned initiative, and therefore, it helps communicate the relationships between program elements and garner agreement on the overall plan among stakeholders and potential partners as well as the target population (Breny Bontempi et al., 2010; W. K. Kellogg Foundation, 2004). This shows the relationship between the program's resources (inputs), its planned activities (outputs), and the anticipated change (outcomes). "Input" includes major resources such as funding, staff, equipment, materials, and space. "Activities" focuses on the specific strategies and interventions of the program. "Outcomes" refers to the predicted and hoped for results in implementing the program. This can be divided into three types according to the anticipated time to change: short-term outcomes, intermediate outcomes, and long-term outcomes.

These tools are extremely helpful for the program staff and stakeholders in building and shaping a program. In addition, in implementing the program, the tools help the program staff and stakeholders shape a program and accomplish the program's objectives on time and in the way intended.

9.4 Intervention Program to Foster Social Capital

Multiple studies exist that analyze the effect of both individual-level and community-level social capital on health. Many indicate that increased cognitive and structural social capital has beneficial effects. However, in exploring ways to intervene in order to foster social capital, it is argued that stimulating structural social capital such as group participation is more feasible, because the target event is concrete. In contrast, programs facilitating cognitive social capital with abstract aims such as social trust are more difficult to implement and evaluate.

There is no easy way to build social capital. It requires significant material and human resources. Prevention and intervention efforts have traditionally targeted either the general population (through, for instance, the mass media) or individuals who are at risk of adverse health outcomes. The results of prospective multilevel studies support associations between social capital at a neighborhood level (or geographic area) and different aspects of health outcomes. This implies that neighborhoods or other social contexts with low contextual levels of social capital should be targeted.

Social capital does not incidentally arise in communities. Rather, it is itself shaped by the broader structural forces operating at the community level. These include historical patterns of residential mobility and municipal investment in housing and local infrastructure, as well as policies that perpetuate residential segregation or planned reductions in services and amenities (Kawachi, Subramanian, & Kim, 2008). Moreover, the building of social capital must be considered as a

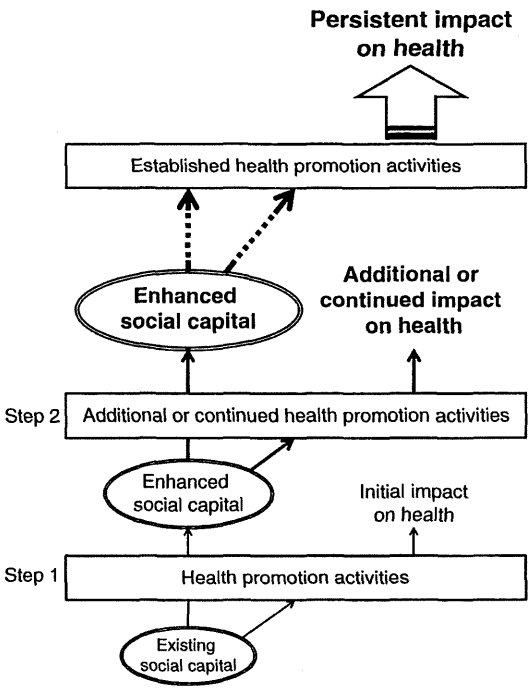

Fig. 9.2 Illustration of the desired relationship between social capital and health promotion intervention programs (Murayama, Fujiwara, et al., 2012)

complement to, rather than a replacement for, broader structural interventions (Szreter & Woolcock, 2004). Figure 9.2 shows the relationship between social capital in the community and health promotion activities (intervention programs) (Murayama, Fujiwara, et al., 2012). Every community has their own level and type of social capital. The existing social capital within a community—which is closely related to civic mobilization, a sense of coherence, and a sense of commitment—can influence both the efficiency and effectiveness of a program. Therefore, the health effectiveness of a program may depend not only on the program itself and the individual participants but also on community social capital. At the same time, social capital can be affected (preferably enhanced) by the implementation of a program. Enhanced social capital can positively influence the next program or continuation of the current program, as well as the effect of the program on the community. This cycle enables the program to have a continuing effect on health in the community. Thus, intervention programs and social capital have a reciprocal relationship.

A number of programs exist that are aimed at fostering social capital (Baum & Palmer, 2002; de Souza & Grundy, 2007; Fujiwara, Natsume, Okuyama, Sato, & Kawachi, 2012; Hampshire & Matthijsse, 2010; Jones et al., 2010; Ottesen, Jeppesen, & Krustrup, 2010; Pronyk et al., 2008). A Brazilian study by de Souza

and Grundy (2007) reported increased individual social capital as a result of a 4-month program of intergenerational activities in which the elderly shared their memories with seventh and eighth grades students in secondary school, using a randomized control design. The elderly in the intervention group were over twice as likely as those in the control group to report positively on cognitive social capital (recognitions that the neighbors are helpful, people are honest, and quality of their family relationships are good). Among the students, those in the intervention group were nearly three times more likely to rate their health as good as compared to those in the control group; however, they were also more likely to judge that most people were selfish.

Ottesen et al. (2010) examined the effects of an intervention program that used physical activity to build individual social capital among inactive women in Denmark. They focused on football and running. The results indicated a positive development in bonding and bridging social capital in the two different types of physical activity but implied that team sports such as football may have an advantage over individual sports in the development of social capital.

A study by Pronyk et al. (2008) examined the changes to both individual- and community-level social capital through community-based intervention. They attempted to explore the effect of the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) program to generate changes in social capital (solidarity, reciprocity, and social group membership) in rural South Africa, using a cluster randomized design (for further detail on microfinance as an intervention to boost community social capital, see Chap. 10). IMAGE combined a microfinance program and training intervention on levels of HIV and intimate partner violence. Evaluation of the intervention was performed using both quantitative and qualitative approaches. After 2 years, higher levels of structural social capital (increased participation in social groups) and cognitive social capital (solidarity, taking part in collective action) were found in the intervention group than in the comparison group. A qualitative approach revealed a decidedly complex picture of the diverse responses to IMAGE in terms of structural social capital (social network), bonding social capital (social support and social norms), and bridging social capital (participation in collective action).

Initially conducted in Baltimore, USA, the Experience Corps® is a social approach to health promotion using elderly volunteers in the community (Fried et al., 2004). The program places a critical mass of older adult volunteers in public elementary schools to generate a significant individual-level impact on the educational outcomes of children and to improve the volunteers' health and well-being (Fried et al., 2004; Rebok et al., 2004). The Experience Corps® uses public elementary schools as the core of the intervention program. The program was designed to impact on school-level and community-level social capital as well as at an individual level, involving children, their parents, teachers, and residents in the community, all to encourage multilevel interactions (individual, school, and community level) (Glass et al., 2004; Rebok et al., 2004).

However, there is still only a limited number of empirical intervention studies relating to fostering social capital. This field of research would greatly benefit from

further studies of interventions aimed at fostering social capital. This would help in establishing positive methods of intervention and the best ways to improve health through building social capital.

In the next two sections, we will introduce two trials that aim to foster social capital in the community in Japan. One is the *RE*search of *PR*oductivity by *INT*ergenerational *S*ympathy (REPRINTS) program, promoting intergenerational interaction between seniors and schoolchildren, and the other is the Taketoyo Project, promoting social interaction among the elderly within a municipality ("salon" activities).

9.5 "REPRINTS": Reciprocal Effect of an Intergenerational Health Promotion Program for Older Adults in Japan

A major hurdle facing Japanese society today is the future economic burden on younger generations due to the predicted growth of welfare and healthcare needs of the older generations. However, rather than focusing on an intergenerational inequity argument, Japan should place priority on energizing older adults' social participation for the benefit of all generations and Japanese society as a whole. Therefore, there is a need for intergenerational initiatives in Japan to encourage older generations to pursue physical and psychological health promotion activities. This is in order to respond to issues among younger generations and represents an opportunity to boost social capital in the community.

Tokyo Metropolitan Institute of Gerontology (TMIG) launched one such intervention research project, REPRINTS, in 2004 (Fujiwara et al., 2006, 2007, 2009, 2010), that educates and engages senior volunteers in picture book reading to young and school-aged children in educational settings. It was decided to base the REPRINTS program in public elementary schools, as modeled by the Experience Corps® program in the USA. This is because public elementary schools have been cores in communities for a long time. The program has been conducted in collaboration with organizations at three locations in Japan. Currently, the program is at a semi- and self-sustainable stage, as it is being operated by participating senior volunteers with supervision and support from TMIG and local municipal entities. In this section, the rationale and underlying conceptual framework of the program, research methods, and the most recent short-term results of the program evaluation will be shared and discussed.

9.5.1 Rationale of the Program

In the USA, the productive aspects of aging have been considered as an essential aspect of a successful aging concept since the beginning of the 1990s. Volunteering as well as paid work are understood as activities that constitute productive aging

(Morrow-Howell, Hinterlong, & Sherraden, 2001). In literature in the USA and Canada, volunteer activities were found to have a high correlation with the physical and psychological health of older participants, although the mechanism of causal relation remains unclear (Fujiwara, Sugihara, & Shinkai, 2005). In addition, in terms of independent activity, which is another important aspect of successful aging, longitudinal studies conducted on a large section of Japan's older adults found that the decline in social roles and intellectual activity could predict instrumental activities of daily living (IADL) disability among older participants (Fujiwara et al., 2003a, 2003b). These studies used the TMIG-Index of Competence (Koyano, Shibata, Nakazato, Haga, & Suyama, 1991), which is one of the Japanese standardized measures to assess the degree of IADL functions. Thus, it is necessary for elderly Japanese to maintain social roles and to engage in intellectual activity in a way that helps to maintain their physical and psychological health. The REPRINTS program was planned and implemented as a health promotion program that utilized an intergenerational engagement approach to respond to such needs while at the same time enabling the volunteers to contribute to society and younger generations.

As mentioned above, the REPRINTS program is based in public elementary schools which are cores in most communities. Moreover, not only senior volunteers but also other people in the community such as students, their parents, teachers, and school volunteer coordinators are involved in the program. Therefore, it is argued that this program is instrumental in promoting intergenerational relationships between different actors in the community and fostering beneficial community social capital. Figure 9.3 is a logic model of the REPRINTS program.

9.5.2 *Conceptualization of the Program*

There are three conceptual pillars underlying the REPRINTS program: intergenerational engagement, intragenerational relationship building, and lifelong learning. The first pillar refers to intergenerational engagement where older participants contribute to children's growth. Erikson (1982) defined "generativity" as adults' fundamental and inherent need to expand their attention from self to others, including younger generations, to transfer knowledge and wisdom, and to care for them. In this intergenerational program, senior participants are expected to share their accumulated cultural knowledge and values with the young participants, as well as to generate mutual trust between the children's parents' generation and themselves by engaging in volunteer activities with children. In general, older persons tend to be inhibited in being generative when surrounding people, including younger persons, lack the understanding about the needs and capabilities of older persons. Thus, it is not only preferable but also important for older people to demonstrate their generativity by responding to such ageism (Palmore, Branch, & Harris, 2005) and building relationships based on mutual trust with younger generations.

The second pillar refers to "building intragenerational relationships," which means encouraging the senior volunteers to build new social networks by working

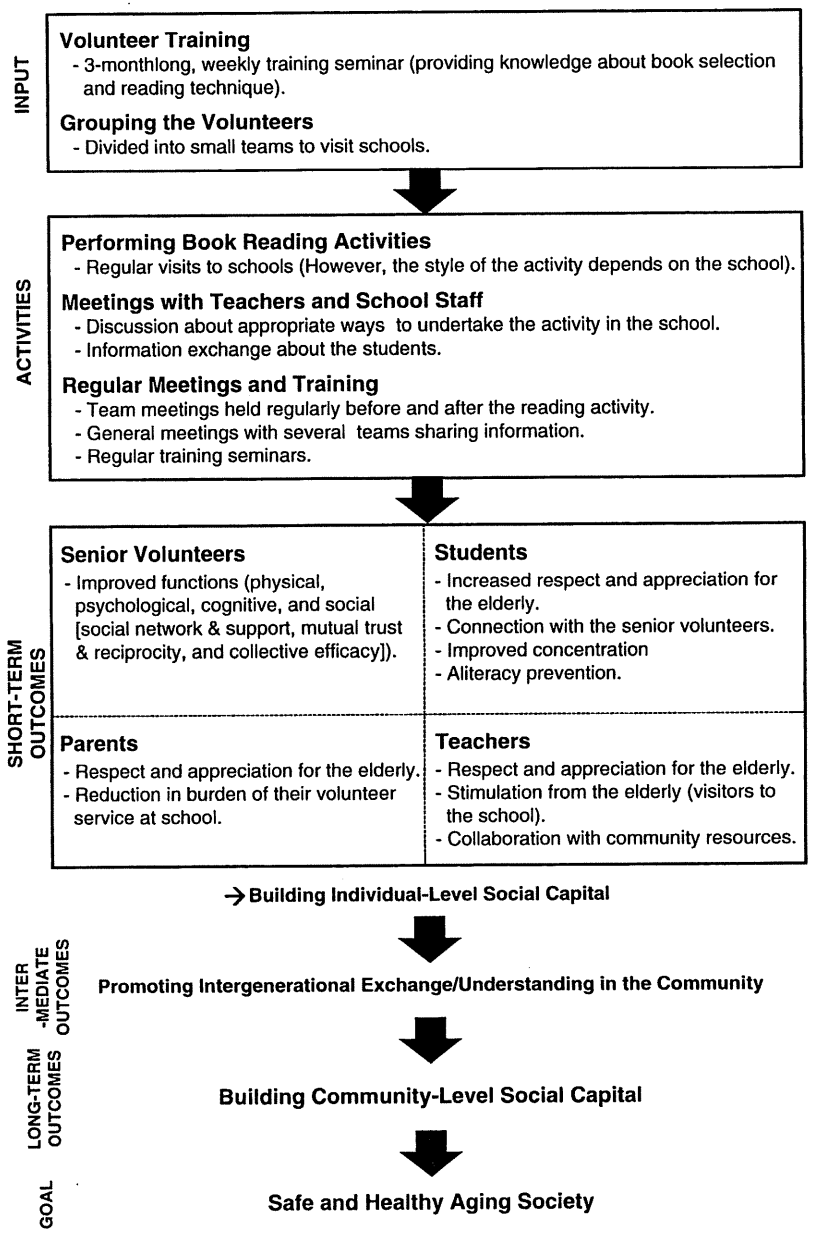

Fig. 9.3 Logic model of the REPRINTS program

closely with other volunteers in group settings. Strong social networks can strengthen subjective health status and contribute significantly to psychological well-being in later life (Masuchi & Kishi, 2001; Ryff & Singer, 1996). The REPRINTS program was designed in a way that would enable senior volunteers to continuously and closely work with peer volunteers so that they could develop meaningful relationships with one another.

The third pillar refers to "lifelong learning." Volunteer activities with intensive learning opportunities have been found to improve cognitive ability (Fried et al., 2004). The program provided the senior volunteers with initial intensive learning opportunities over a 3-month long period, with weekly training sessions before the start of volunteering and continuous and ongoing learning experiences while they studied about picture books, selected appropriate books for children at each session, rehearsed for the school sessions, and received feedback from peer volunteers.

The program uses picture books as the main tool to connect children and senior volunteers. Picture books were thought to be appropriate for the senior volunteers' learning for several reasons. First, picture books do not necessarily require intensive previous reading experiences on the part of the senior volunteers. Instead, it was expected that senior volunteers would feel familiar with those books targeting young children. Secondly, developing various styles of book reading entails complex skill development and hence is an ideal activity through which to engage practitioners in continuous learning for quality improvement. Three trainers with extensive experience in picture book reading lectured at the initial training sessions and provided ongoing advice and feedback to the senior volunteers about book-reading techniques. Thirdly, reading picture books is considered developmentally appropriate not only for children but also for adults. There is a Japanese saying that one should read a picture book at three different times through one's life: first in childhood, secondly during the child-rearing years, and thirdly later in life (Yanagida, 2004). Older people are thought to be particularly touched and feel empathy when reading picture books because of their rich life experiences.

9.5.3 *Program Settings and Stakeholders*

Three experimental areas were selected for the program: Chuo Ward in central Tokyo; Tama Ward in Kawasaki City in Kanagawa Prefecture, a suburban area of Tokyo; and Nagahama City in Shiga Prefecture, a local city in the west of Japan. The populations of these three areas in 2004 were approximately 90,000, 94,000, and 62,000, respectively. When the project team sought collaboration with local municipalities in March 2004, these three municipalities became counterparts for this research project and formed project teams with TMIG staff. The Chuo Ward Board of Education agreed to promote children's reading practices and lifelong education for older residents, and Tama Ward Health and Welfare Centers and Nagahama City Health Promotion Centers agreed to develop and undertake new health promotion strategies for older residents.

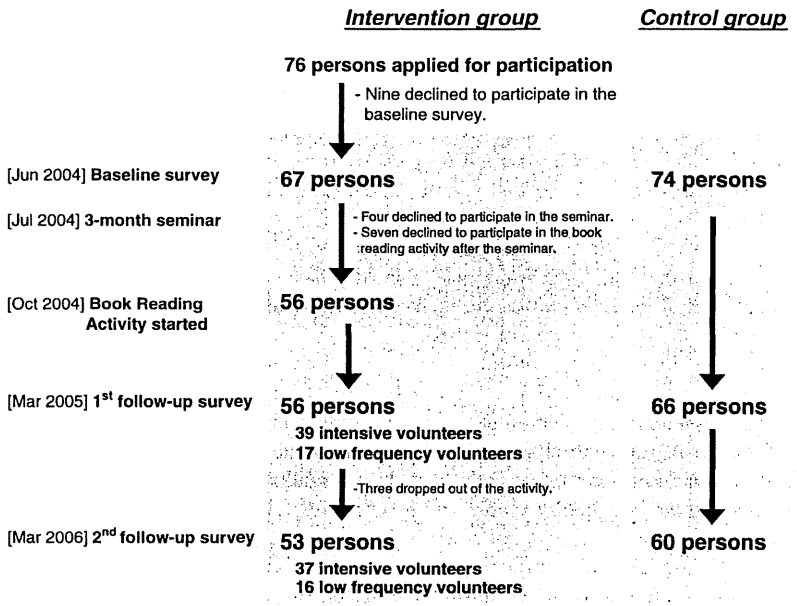

Fig. 9.4 Flow diagram of the elderly participants in the REPRINTS program

As the REPRINTS program is a school-based program, it was necessary to propose the idea to negotiate and plan the program with the municipal school board and school staff. In addition, as the short-term aim for the senior volunteers was to improve their health status and functions, municipal staff from the healthcare sector were involved in the program development process. Thus, multi-sector collaboration was an essential task in creating this program.

9.5.4 *Program Effects on Senior Volunteers*

9.5.4.1 Design and Recruitment

We adapted a nonrandomized trial design, setting intervention and control groups in order to evaluate the effects of REPRINTS on the senior volunteers. Data collection was performed in three points: before the program (baseline), at the 1-year mark, and 2 years after the program started (Fig. 9.4).

In order to recruit the senior participants in the program (the intervention group), the project team advertised the REPRINTS program through community newspapers and newsletters in the three target municipalities and held events to disseminate the

program, from March to July 2004. Those who decided to participate in the program submitted application forms to the project members. After the volunteer applications were submitted, the senior applicants attended an intensive training seminar, conducted weekly, over a 3-month period (from July to September 2004). Among the 76 persons who applied for participation, 67 older persons participated in the seminars. After completing the seminars, all 67 persons agreed to participate in the project. The participants of the intervention group agreed to work as book-reading volunteers for the children at each collaborating educational institution and participate in the surveys for data collection purposes continuously. Twenty-seven senior volunteers in Chuo Ward, 19 in Tama Ward, and 21 in Nagahama City were determined as the participants of the intervention group. The book-reading activity started in October 2004, after the training was completed.

The participants in the control group were also recruited through the same methods as the intervention group and through word of mouth via the project staff and the participants in the intervention group. Seventy-four older persons were selected as the control group participants. The participants in the control group were recruited from various kinds of social activity clubs for adults other than the REPRINTS program, including hobby clubs, volunteering for adults, and community-based health promotion programs, but none of them were allowed to engage in intergenerational programs with children. After project staff explained the protocol of the project in detail and obtained informed consent, individuals in the control group engaged in conventional social activities and participated in the same health checkup as the intervention group, but did not take part in any specific training or intervention programs.

The first follow-up data was collected in March 2005 (9 months after the baseline survey). The follow-up data consisted of the same items as the baseline. Fifty-six volunteers out of the 67 participants in the intervention group, who participated in the baseline health checks, continued to volunteer, and 11 volunteers withdrew. Thirty-nine volunteers who had participated in more than a few sessions every month were defined as "intensive volunteers" and 17 volunteers with session attendance of once a month or less as "low-frequency volunteers." In the control group, 66 participants were included in the first follow-up data collection. In March 2006, the second set of follow-up data was collected from 53 intervention volunteers (37 intensive volunteers and 16 low-frequency volunteers) and 60 control group participants (21 months after the baseline survey).

9.5.4.2 Structure Building of Volunteer Group: Training and Organizing

Volunteer Training Sessions

The participants in the intervention group attended weekly training sessions for a 3-month period from July 2004 to learn about book selection and reading techniques. Basic knowledge about contemporary Japanese school life and the rules for school-based volunteer activities were also introduced so that the participants could start their work as book-reading volunteers.

Grouping the Volunteers

After finishing the training seminars, the volunteers were divided into groups of 6–10 volunteers to visit six elementary schools, three kindergartens, and six childcare centers for after-school children once a week or once every 2 weeks beginning in October 2004. Each volunteer chose a group mostly because of the location of the school or childcare center that the group was to visit regularly. The volunteer groups worked intensively with peer volunteers. Each group had regular meetings before and after the reading sessions in order to share information, to discuss how to improve the quality of reading techniques, and to receive organizational updates. In addition, the groups in the same area met monthly for information exchange and mutual learning purposes. Book-reading trainers and other professionals in related fields, such as gerontology and lifelong learning, were invited to the area meetings to provide lectures in which they shared their knowledge about picture books, volunteerism, aging, and issues in the lives of contemporary children.

Planned Volunteer Activities

Although there was some variation in participating schools in terms of the style of volunteer activities, there was also a high degree of consistency across sites. At each kindergarten, the group members played action songs with approximately 20 children and then read three or four picture books for them for a 30-min session. At each elementary school, one of the group members read one or two picture books before the first class in the morning in each weekly session, and the rest of the members assisted the reader or kept notes about book-reading quality, children's responses, and other occurrences during the session. The volunteers sometimes secured extra time to read picture books for 20–30 min during other breaks on the same day in response to students' occasional requests.

9.5.4.3 Measurements

The main measurements were as follows: the TMIG-Index of Competence as higher-level functional capacity (Koyano et al., 1991); walking speed, the one-leg standing duration test, and grip strength as physical function; self-rated health (ranging 0–3; 0=poor health, 3=good health), the short version of the Geriatric Depression Scale with 15 items (GDS) (Burke, Roccaforte, & Wengel, 1991; Schreiner, Hayakawa, Morimoto, & Kakuma, 2003), and Rosenberg's Self-Esteem Scale with ten items (Rosenberg, 1979) as psychological function; episodic memory, language capability using "Story Recall" from the Japanese version of the Rivermead Behavioral Memory Test (Watamori, Hara, Miyamori, & Eto, 2002), and phonological and semantic verbal fluency tests (Sasanuma, 1988) as cognitive function; and the numbers of individuals whom the respondents had daily contact with fitting into four different types of relations (relatives, business acquaintances, neighbors, and others) and the frequency of personal contacts with four different

types of relations (grandchildren, children in the neighborhood, other children they had contact with in the volunteer program or events, and friends or neighbors) as social function. The frequency of personal contacts was split into six categories (0=no contact, 1=less than once a month, 2=once a month, 3=twice or three times a month, 4=once a week, and 5=more than twice a week).

9.5.4.4 Results

The subjects were all independent in basic activities of daily living (walking, eating, toileting, incontinence, dressing, and bathing). A comparison of the baseline characteristics of the intervention group and the control group revealed a number of differences. Compared to the participants in the control group, higher proportions of those in the intervention group had no grandchildren (41.8 vs. 20.3 %) but had volunteer experience (79.1 vs. 52.7 %), longer educational years (13.4±2.5 vs. 12.3±2.5 years), and faster usual walking speed (86.7±12.3 vs. 81.3±12.9 m/min) at baseline. However, there were no significant differences on other variables between the two groups.

We divided the program participants in REPRINTS ($n=67$) into two groups according to frequency of engagement in activities: 56 volunteers engaged in the program for more than 9 months (continuing until the first follow-up survey), and 11 volunteers withdrew from the program within the first 9 months. Between these two groups, there was no significant difference in characteristics such as demographics, functional capacity, and any functions at baseline (data not shown). In addition, there was also no significant difference in any functions between the intensive volunteer group ($n=37$) and the group of volunteers with low frequencies ($n=17$) at baseline (data not shown).

Regarding the effects of the intervention program, we found significant interaction between the groups (intensive volunteer group vs. control group) and time of surveys (baseline, first follow-up, second follow-up) with regard to frequency of interchange with children in the volunteer program or events ($p<0.01$) and self-rated health ($p<0.01$), using the generalized linear model adjusted for gender and age. These positive effects on intensive volunteers continued for 12 months more for these two variables (Figs. 9.5 and 9.6).

9.5.5 *Reciprocal Effects on Children and Their Parents*

As mentioned above, the REPRINTS program had a positive effect on the senior volunteers. It is argued that these effects were generated through reading picture books with children, intensively reading and practicing book readings before each performance, and discussing these books and book-reading methods and styles with other volunteers at weekly school-based training meetings. In addition to the effect

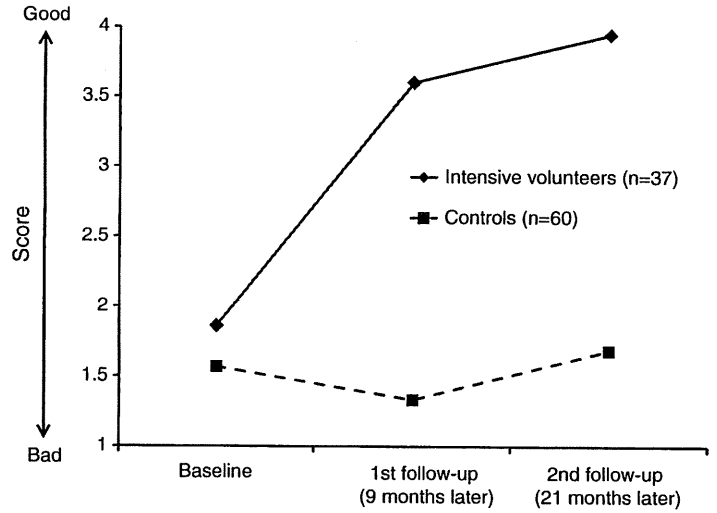

Fig. 9.5 Transition of frequency of interchange with children in volunteer program or events among participants during the 21 months (range 0–5) (Fujiwara et al., 2009)

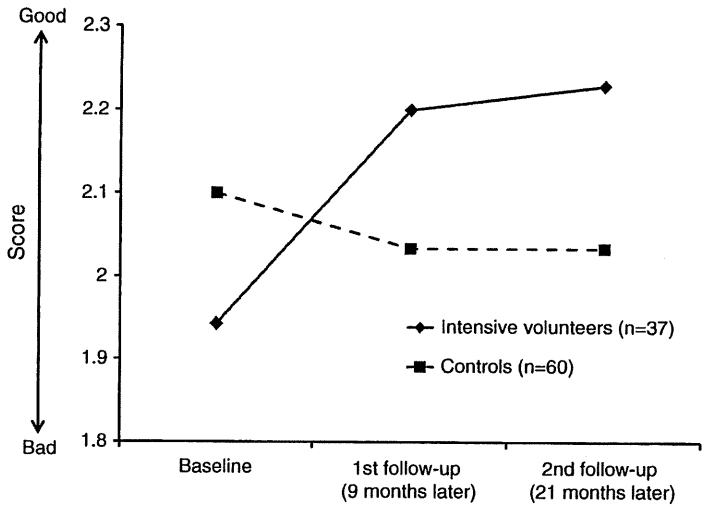

Fig. 9.6 Transition of self-rated health among participants during the 21 months (range 0–3) (Fujiwara et al., 2009)

on senior volunteers, we also examined the program effects on other people involved. These included elementary school children who were the direct recipients of the volunteer services (picture book reading) and parents who experienced indirect effects of school volunteering by senior citizens through REPRINTS.

9.5.5.1 Setting and Participants

Of three areas where the REPRINTS program has been implemented, we selected Tama Ward in Kawasaki City for more intensive research. In this setting, a group of four to six volunteers have visited an elementary school in the suburb of the city (470 students) twice a week to read picture books since November 2004. In this school, the book-reading session itself usually took 15–30 min. The volunteers stayed at the elementary school for 2 hours total. They conducted a meeting, prepared for the session, and performed a book reading. The program was offered to the students of all grades in the library, twice a day (in the morning and noon recess). In particular, class teachers in the first to fourth grades encouraged the students to participate in the book-reading program, and the volunteers also invited them before the program started.

We included all 402 students of the first to fifth grades in the 1-year longitudinal evaluation but excluded 68 students of the sixth grade because they could not be followed up after their graduation from elementary school. Surveys were conducted three times using a self-administered questionnaire: baseline survey (November 2004; after the volunteer activity started) and first and second follow-up surveys at 6-month intervals after the program started (May and November 2005).

For parent evaluation, all 230 parents whose children were in the first to fourth grade at baseline were included in the 2-year longitudinal evaluation: 114 in the first and second grade (lower grade) and 116 in the third and fourth grade (middle grade). We excluded the parents whose children were in the fifth and sixth grade at baseline because they would graduate from elementary school before the follow-up surveys were conducted. The self-administered questionnaire surveys were conducted with the parents five times: baseline survey (November 2004) and four follow-up surveys at 6-month intervals after the program started (May and November 2005 and 2006). We described the response distribution at every survey (repeated cross-sectional design).

9.5.5.2 Measurements

In the survey for student evaluation, a ten-item emotional image of older adults using the semantic differential (SD) method was originally set as the outcome variable in this study (e.g., warm–cold, affable–unaffable, strong–weak). Factor analysis for these ten items indicated two factors: "evaluation" for six items (ranging 6–30) and "potency/activity" for four items (ranging 4–20), and therefore, we used these two subscales in analysis.

The parents were asked to rate the effect of the REPRINTS program on aspects such as "promotion of reading for children," "children's respect for older adults," "children's appreciation for older adults," "children's familiarity with older adults," "promotion of community safety," "reduction in parent's physical burden of volunteer service at school," and "reduction in parent's psychological burden of volunteer service for school" (each item had a range of 1–5).

9.5.5.3 Results

Students

Of 402 students in the first to fifth grade, 345 who responded to all three surveys were included in the analysis. Among the participants, half were male and three quarters had no experience living with their grandparents at baseline. The participants were divided into two groups in terms of frequency of interchange with volunteers: participants who answered that they had participated in the book-reading activity twice or three times in total (counting all three surveys) were defined as the high-frequency group ($n=170$), and participants who answered that they had participated in the book-reading activity once or less in total (counting all three surveys) were defined as the low-frequency group ($n=175$). In the subscale for "evaluation," a generalized linear model demonstrated a significant interaction between the group and number of surveys, adjusted for school grade of children, gender, experience of interchange with older people, and social desirability scale for children (Nakatani, 1991) ($p=0.012$). Figure 9.7 illustrates the score trends of the two groups. In contrast, there was no significant interaction in the subscale of "potency/activity."

Parents

Figure 9.8 shows the trends of the rating scores for "parents' physical and psychological burdens of volunteer service at school" of lower and middle grade children. Using two-way analysis of variance, rating for "parents' physical burden of volunteer service at school" was significantly affected by the school grade of children ($p=0.031$) and time of surveys ($p<0.001$). Rating for "parents' psychological burden of volunteer service at school" had a significant effect of time of surveys ($p<0.001$). These two rating scores decreased during the 2-year period for the parents of both lower and middle grade children.

9.5.6 *Anticipated Effects on Teachers and Communities*

Unfortunately, it was not possible to quantitatively evaluate the effect of the REPRINTS program on teachers. However, teachers in the school that the program has been taken have requested to continue the program in the school. This implies that

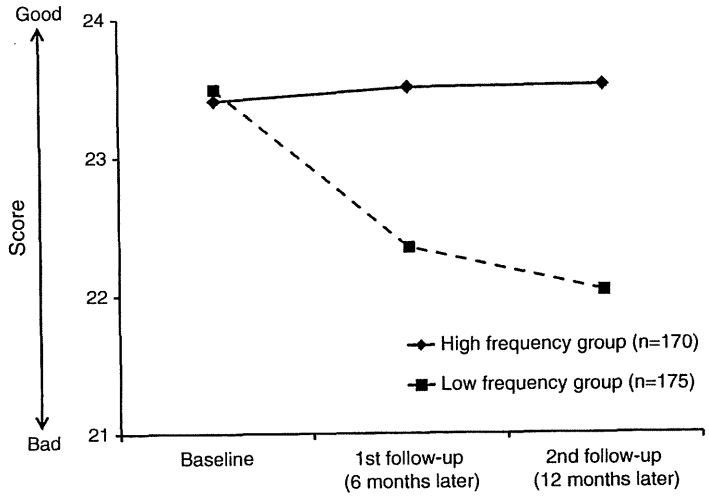

Fig. 9.7 Transition in perceptions of the elderly among elementary school students, stratified by frequency of interchange with REPRINTS senior volunteers using "evaluation" subscale (range 6–30)

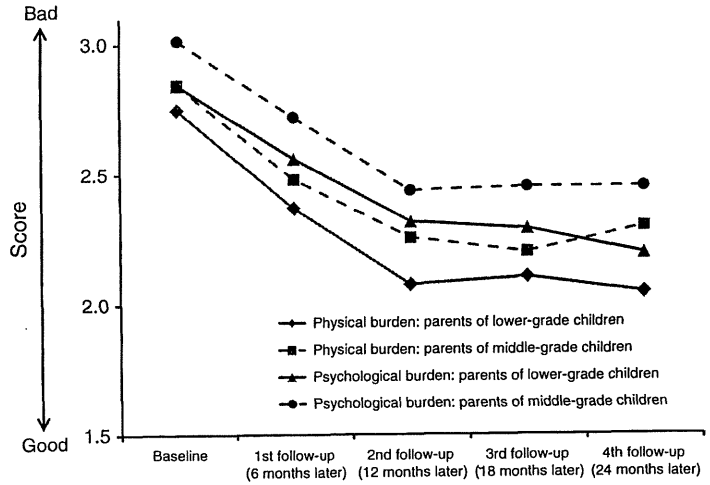

Fig. 9.8 Transition of the ratings for "physical and psychological burdens of parents' volunteering service at school" during 24 months (range 1–5)

the teachers appreciate the program. In addition, through interviews, we found that the teachers had formed opinions about the effect of the volunteer program in the school setting. The teachers felt that they were very inspired by the volunteers, particularly in relation to instructional approach. They were able to observe how the volunteers interacted with the students, and this provided fresh insight for their own teaching practices. These could be regarded as a positive program effect on the teachers.

Furthermore, we still have not examined the community-level effect of the program. This trial would be quite important to test whether the program has the power to influence or stimulate community social capital. As REPRINTS is a school-based intervention program, a cluster controlled trial may be a preferable design. Exploring the program's effect on the community should be considered a high-priority, highly urgent task.

9.5.7 Summary

The REPRINTS program aimed to activate senior volunteers' intellectual activities regularly and cyclically through reading picture books with children, intensively reading and practicing reading these books before performance, and discussing these books and book-reading methods and styles with other volunteers at weekly school-based training meetings. In fact, several effects of the program were obvious: the participant's self-rated health and some aspects of social support and networking were significantly improved in senior volunteers. Moreover, this program had reciprocal effects on students, their parents, and teachers. Evaluating the effects of the program on the whole community is the next important area of study.

This section indicates that the REPRINTS program can contribute not only to volunteers' health but also in activating psychological and physical interactions among the volunteers, the children, their parents, and teachers. Interestingly, although the parents did not have any direct contact with the senior volunteers, there were notable flow-on effects from the program to the parents. This means that the program fosters relationships between generations of older adults and parents of school children with the children as mediators. The REPRINTS program has the potential to establish social trust, reliance, and reciprocity among multiple generations. That is, REPRINTS, a school-based intervention program, has the potential to serve as a trigger to boost social capital in the community as a whole.

9.6 The Taketoyo Project: A Community Intervention Trial

As another example of an intervention trial, we will introduce "the Taketoyo Project," which is a part of the Aichi Gerontological Evaluation Study (AGES) Project managed by the Center for Well-being and Society, Nihon Fukushi University (Kondo, 2010). This project facilitated social participation through interventions into existing social environments, based on theories relating to social capital.

9.6.1 Project Rationale

Kondo and his colleagues evaluated the risk factors of functional decline using the AGES cohort data to develop an intervention trial (Nishi, Kondo, Hirai, & Kawachi, 2011). The subjects used in one analysis were healthy at point of survey but come to require long-term care or died within 1 year after the survey. In the evaluation, five risk factors for functional decline set by the national government were used: poor oral health, malnutrition, a history of falling, depression, and social isolation. They found about half the people were low risk in the year before they declined in their physical or cognitive functions and/or died. It means that the high-risk strategy, in which individuals of a high-risk group have been screened and then offered intervention, was not sufficient, because about half were low risk 1 year before. Consequently, in light of these results, a new program based on population strategy along with high-risk strategy was developed.

Other analyses showed that hobbies, social networks, and social participation were good for healthy aging. Older persons who had no hobbies and were socially isolated were at higher risk of losing functions or mortality (Hirai & Kondo, 2007; Hirai, Kondo, Ojima, & Murata, 2009; Takeda, Kondo, & Hirai, 2010; Yoshii, Kondo, Kuze, & Higuchi, 2005). The relationship between poorer social capital and poorer self-rated health observed in multilevel analysis might mean that increased social capital helps to bring about good health in older people (Ichida et al, 2009). Moreover, it was also found that the location of facilities, a relatively short distance from each other, lead to a higher rate of facility usage (Hirai & Kondo, 2008b) and that living in higher population density areas was associated with less social isolation among older people (Hirai, Kondo, & Hanibuchi, 2008).

9.6.2 Project Concept

The purpose of the Taketoyo Project is to develop a prevention program aimed at helping to arrest the physical or cognitive functional decline of older people. The project intended to increase social support networks and social capital in the program through modifying social environment based on social capital theory. The changes in social support networks and social participation were expected to bring about good health and well-being on an individual level. The interventions were also expected to foster social capital on the community level. The town of Taketoyo is located on the Chita Peninsula, 45 min from Nagoya. The population of Taketoyo town was 42,000 and the proportion of older people was 17.2 % in 2007. Taketoyo town's participation in the AGES Project was aimed at arresting functional decline.

According to the above-mentioned evidence from AGES, five key program concepts were developed (Table 9.1). First, it is based on population strategy. The main aim is to intervene in various social environments. Programs called "salons" have been developed at various sites in the communities. Second, the program is provided not only at a few sites located in the center of the town but also at several other

Table 9.1 Key concepts of the program in the Taketoyo Project

Population strategy	Program is designed to intervene in social environment. Program sites are called "salons"
Multiple locations	Programs is held in not only a few sites located in the center of the town but many sites through the town. Older people can easily come to the sites on foot
Volunteer staff	Program is managed by volunteers, not professionals. Multiple locations requires large staff numbers
Municipal support	Programs are supported by the municipality through the provision of meeting places, financial assistance, and public relation activities
Various activities	Not only physical exercise but also a variety of enjoyable social programs are provided

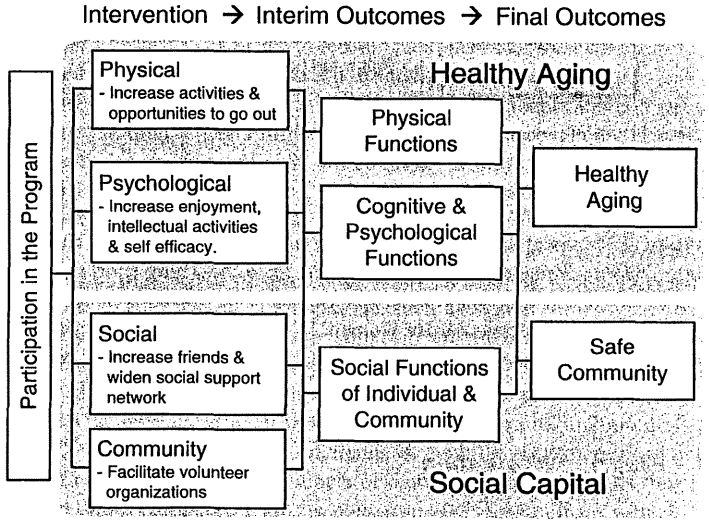

Fig. 9.9 Program theory for healthy aging and a safe community (Takeda et al., 2009)

locations around the town. The aim is to provide easy access for older people by selecting sites within walking distance of various elderly communities. Third, the program is managed by volunteers, not professionals. This is because multiple locations require many staff members, and volunteering is believed to be good for their health. Fourth, the programs are supported by the municipality through the provision of meeting places, financial assistance, and public relations activities. Fifth, not only physical exercise but also a variety of enjoyable social programs are provided.

Figure 9.9 shows the program theory in the Taketoyo Project. The program aims to facilitate healthy aging for individuals through the promotion of physical, psychological, and intellectual activities. Another final outcome is to develop safe communities with rich social capital. Increasing friends and social support networks

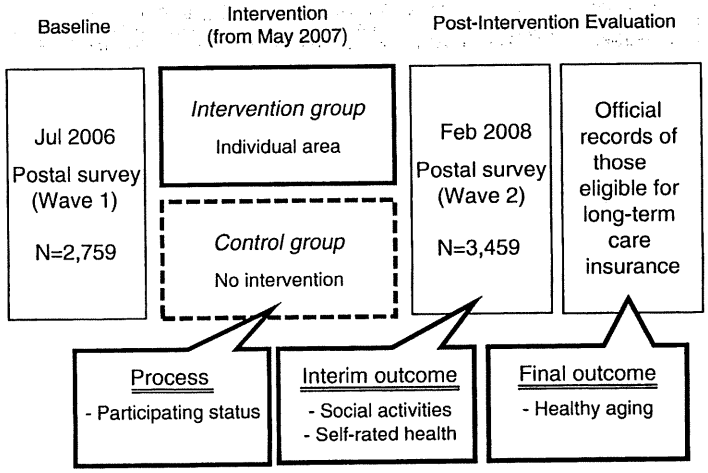

Fig. 9.10 Schedule of program evaluation (Hirai, 2009)

facilitates volunteer activities and promotes healthy social functions within the community. The expectation is that these activities will foster social capital (Hirai & Kondo, 2008a). Some examples of programs include writing short poems, recreational games, and physical exercises such as ping-pong and calisthenics. Just chatting is very popular, in particular for women. In recent, the number of the exchange program with children has increased. The various programs are run by volunteers.

9.6.3 Program Evaluation

A postal survey in 2006, as a part of AGES Project, provided information regarding pre-intervention status. Three salons were opened in 2007 with nine salons in operation by 2012. Follow-up surveys for participants were conducted annually. In 2008, post-intervention evaluation was conducted, with questionnaires sent to all older people in Taketoyo Town except for those eligible for long-term insurance. Evaluations of interim outcomes and the final outcome using hard data from official records are currently ongoing (Fig. 9.10).

9.6.4 Interim Results of Evaluations

In May 2007, three salons were in operation. As of February 2008, 39 sessions of this program have been held over the span of 10 months. In other words, on average,

one or two sessions per month were provided per site. Participants included a total of 548 persons, 2,341 times total attendance, and 87 registered volunteers. The participant rate was made up of 9.4 % healthy, older people who were not eligible for long-term care insurance. Numbers of participants between 2006 and 2007 were compared. In 2006, during the pre-intervention period, 93 persons attended a total of 328 times. In 2007, during the 8 months after introduction of the program, 412 persons attended a total of 1,555 times. In calculating the ratios of 2007/2006 (per month), it was found that the number of participants increased by 6.6 times, whereas attendance had increased by 7.1 times (Hirai & Kondo, 2008a). Analysis of participants' residence distribution using geographic information system showed that most participants came from neighborhoods near the sites. After successful introduction of the new program, Taketoyo Town decided to set the target of opening 14 sites by 2020. The number of 14 sites is more than the current number of 11 sites for nurseries.

In the survey for the program participants, among the 321 respondents, more than 30 % reported that they began to feel happier, increased their number of friends, and obtained health-related information through the program.

Moreover, difference in several aspects between participants and nonparticipants was examined. A total of 1,693 subjects responded to both pre- and post-intervention surveys conducted in 2006 and 2008. Variables for social capital included perceived trust and reciprocity, social support, and social participation (Hirai, 2010; Hirai & Kondo, 2011). Among these variables, we will introduce the evaluation of social participation here. The number of community organizations that participants and nonparticipants were a part of were counted and compared. Community organizations included eight types of organizations, such as residents' associations, sports clubs, hobby circles, religious and/or volunteer organizations (Fig. 9.11) (Kondo, Hirai, Takeda, Ichida, & Aida, 2010). Because socially active persons tend to participate in other programs or organizations, subjects were divided into three groups according to the number of organizations they participated in, in 2006. In the same strata in 2006, it was found that participants in the program experienced a statistically significant increase in the numbers of community organizations they participated in, in 2008, compared with the nonparticipants group. For example, among the persons who did not originally participate in any organizations in 2006, 28 % of the nonparticipants group began to participate in some type of community organization by 2008. In comparison, 65 % of the participants group began to do so.

In addition to change in the number of community organizations which the participants were a part of, increase in provided and received social support among the program participants was examined. Data was from the survey for volunteers ($n=40$) and participants ($n=33$) of the program. One third to four fifths of participants felt that both provided and received social support, including emotional, instrumental, and informational support, and increased 6 months after the introduction of the program (Fig. 9.12) (Takeda et al., 2009).

According to these limited interim findings, the development of a program with the aim of building social capital through promoting social participation seems to have had a significant impact on social interactions among older people in the community.

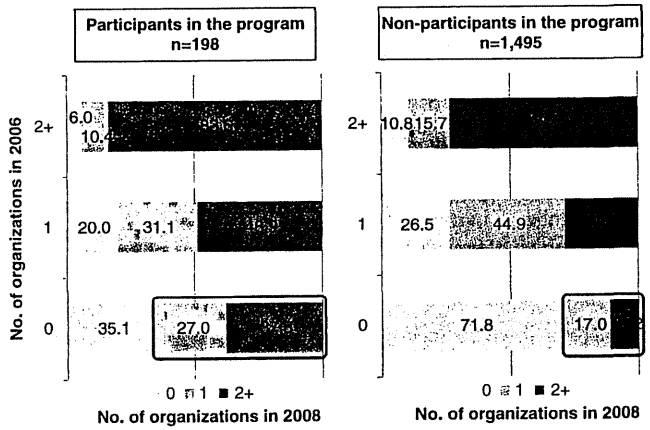

Fig. 9.11 Change in the number of organizations participated in comparing the program participants and nonparticipants (Kondo et al., 2010)

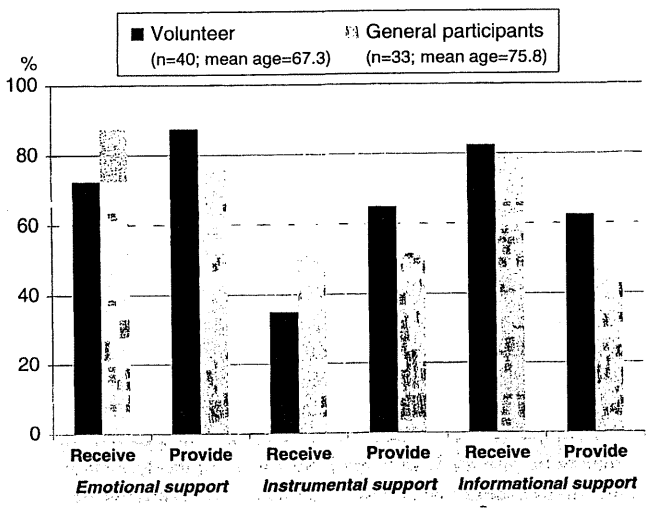

Fig. 9.12 Prevalence of increase of social support after 6 months from introduction of the new program

9.6.5 Summary: The Pathway from Social Capital to Health

Kawachi and Berkman (2000) proposed a number of hypotheses relating to the pathway from social capital to health: (1) health-related information and behavior, (2) access to services and amenities, (3) psychosocial process, and (4) social capital at the policy unit level. These hypotheses are partially supported by observations of the Taketoyo Project. For health-related information and behavior, participants reported that they obtained health-related information from the program. Older people in the town gained access to the program because of the easily accessible program sites managed by volunteers. Observed increase of social support and participation implies improved health. As the introduction of the program was successful, the target number of program sites has been added to the town's development policy. Although additional observation of which pathways most effectively facilitate a successful shift from the interim outcome to the final outcomes is necessary to study the effects on heath improvement, these observations seem to partially support the hypotheses that a mechanism exists which links social capital and health.

9.7 Conclusion

In this chapter, we discussed the evidence of interventions that have leveraged the concept of social capital to improve health outcomes among aging populations and introduced two Japanese examples: the REPRINTS program and the Taketoyo Project. These trials are currently being conducted in limited areas, but general aspects of the programs can be expanded throughout the country because the programs have been developed in popular settings.

Ongoing analysis revealed a number of clues as to how to perform social capital boosting interventions in the community. The first point is that the target population should not be limited. Although the rapidly aging population is a worldwide issue, community is a collectivity consisting of multiple generations. From the experiences of the REPRINTS program, a spillover effect on other generations as a result of the intervention (intergenerational interaction) would be one of the desirable outcomes. The second is about the intervention unit size. The REPRINTS program is a school-based (specifically, elementary school-based) intervention program, and the Taketoyo Project is on a municipality level. The effect of contextual social capital in relation to the size of a community (or district/neighborhood) unit on people's health should be examined further, but a larger intervention unit might further reduce its effectiveness because people's connections and relationships become more tenuous, the larger the range of the unit. The unit size of intervention would be better defined by the range of the resident's daily activities and interactions and by people's perceived range of the community (or district/neighborhood). The third is about the program setting. As we mentioned above, the settings of these two trials are not special but represent popular existing resources in the community (e.g., elementary school).